APRIL 5, 1940 NUMBER 356

THE UNIVERSITY OF NORTH CAROLINA RECORD

THE GRADUATE SCHOOL

CATALOGUE ISSUE
1939-1940

Announcements for the Session
1940-1941

GRADUATE SCHOOL SERIES, No. 37

THE UNIVERSITY OF NORTH CAROLINA PRESS
ISSUED 12 TIMES A YEAR AS FOLLOWS: 4 NUMBERS IN FEBRUARY, 3 NUMBERS IN MARCH, 3 NUMBERS IN APRIL, 1 NUMBER EACH IN JUNE AND OCTOBER
ENTERED AS SECOND-CLASS MATTER AT THE POSTOFFICE AT
CHAPEL HILL, N. C.
UNDER THE ACT OF AUGUST 24, 1912

APRIL 5, 1940 NUMBER 356

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CALENDAR FOR 1940

JANUARY

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CALENDAR FOR 1941

JANUARY

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CATALOGUE OF EVENTS*

Session, 1940-1941

1940

June 9-11	*Sunday through Tuesday,* Commencement Exercises.
June 13-July 20	Summer Session, First Term.
July 22-August 28	Summer Session, Second Term.
Sept. 24	*Tuesday.* Registration for the fall quarter.
Sept. 25	*Wednesday.* Class work for the fall quarter begins.
Oct. 11	*Friday.* General Meeting of Graduate Students and Faculty, 8 p.m., Smith Building. Last day for submitting applications for admission to candidacy for the Ph.D. degree at the June Commencement of 1941.
Oct. 12	*Saturday.* University Day.
Oct. 28	*Monday.* Students desiring to take either or both of the examinations for reading knowledge of German and French (or examinations in other languages) should register in the Graduate Office by this date.
Nov. 16	*Saturday.* The examination for reading knowledge of German for candidates for higher degrees will be held at 9:30 a.m. in Saunders 109.
Nov. 23	*Saturday.* The examination for reading knowledge of French for candidates for higher degrees will be held at 9:30 a.m. in Murphey 314.
Nov. 27	*Wednesday.* Thanksgiving Recess begins at 1:00 p.m.
Dec. 2	*Monday.* Thanksgiving Recess ends at 8:30 a.m.
Dec. 12-20	*Thursday through Friday at 1:00 p.m. of the following week.* Registration for the winter quarter.
Dec. 16-20	*Monday through Friday (1:00 p.m.).* Examinations for the fall quarter.
Dec. 20 (afternoon)-Jan. 1, 1941	Christmas Recess.

1941

Jan. 2	*Thursday.* Registration of new students. Class work for the winter quarter begins.
Jan. 8	*Wednesday.* Last day for submitting applications for admission to candidacy for the master's degree at the June Commencement of 1941. Last day for submitting applications for admission to candidacy for the Ph.D. degree in August, 1941.

*Applications for admission to the Graduate School, accompanied by full credentials in the form of transcripts of academic records, should be filed in the office of the Dean at least thirty days in advance of the quarter in which admission is sought.

Mar. 10-18	*Monday through Tuesday at 1:00 p.m. of the following week.* Registration for the spring quarter.
Mar. 13-18	*Thursday through Tuesday at 1:00 p.m.* Examinations for the winter quarter.
Mar. 15	*Saturday.* Students desiring to take either or both examinations for reading knowledge of German and French (or examination in other languages) should register in the Graduate Office by this date.
Mar. 18-23	*Tuesday afternoon through Sunday.* Spring Recess.
Mar. 24	*Monday.* Registration of new students. Class work for the spring quarter.
Mar. 29	*Saturday.* The examination for reading knowledge of German for candidates for higher degrees will be held at 9:30 a.m. in Saunders 109.
April 5	*Saturday.* The examination for reading knowledge of French for candidates for higher degrees will be held at 9:30 a.m. in Murphey 314.
April 12	*Saturday.* Last day for submitting applications for admission to candidacy for the master's degree in August, 1941.
April 26	*Saturday.* Last day for submitting doctoral dissertations.
May 10	*Saturday.* Written examinations for the Ph.D. degree may not be taken after this date. Last day for submitting theses for the master's degree.
May 14	*Wednesday.* Written examinations for the master's degree may not be taken after this date.
June 2-6	*Monday through Friday.* Examinations for the spring quarter.
June 8-10	*Sunday through Tuesday.* Commencement Exercises.

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GEORGE COFFIN TAYLOR, Ph.D., Litt.D., *Kenan Professor of English*

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* Died September 29, 1939.
** Died May 12, 1940.
*** Absent on leave September 1, 1939, to March 15, 1940.

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* Absent on leave, fall and winter quarters, 1939-1940.
** Absent on leave on the Kenan Foundation, fall quarter, 1939-1940.
*** Absent on leave, 1939-1940.
† Absent on leave on the Kenan Foundation, winter quarter, 1939-1940.
†† Absent on leave, spring quarter, 1939-1940.

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STEPHEN ALBERT EMERY, Ph.D., *Associate Professor of Philosophy*

** Absent on leave, spring quarter, 1939-1940, resigned, effective June, 1940.
*** Resigned, effective March, 1940.
† Absent on leave, 1939-1940.

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FLOYD HARRIS EDMISTER, Ph.D., *Associate Professor of Chemistry*
JOSEPH MERRITT LEAR, M.A., *Associate Professor of Insurance*
PRESTON COOKE FARRAR, M.A., *Associate Professor of the Teaching of English*
HOWARD FREDERICK MUNCH, A.M., *Associate Professor of the Teaching of Mathematics*
RALPH MCCOY TRIMBLE, C.E., S.M., *Associate Professor of Applied Mathematics*
SAMUEL SELDEN, A.B., *Associate Professor of Dramatic Art and Associate Director of the Carolina Playmakers*
EDWIN CARLYLE MARKHAM, Ph.D., *Associate Professor of Chemistry*
JAMES WILLIAM FESLER, Ph.D., *Associate Professor of Political Science*
EARL ANDERSON SLOCUM, M.M., *Associate Professor of Music*
ALFRED RUSSELL, D.Sc., *Associate Professor of Organic Chemistry*
HUGO GIDUZ, A.B., *Associate Professor of the Teaching of French*
PRESTON HERSCHAL EPPS, Ph.D., *Associate Professor of Greek*
JAMES EDWARD MAGOFFIN, Ph.D., *Associate Professor for Industrial Research*
MARGARET JARMAN HAGOOD, Ph.D., *Research Associate and Statistical Technician in the Institute for Research in Social Science*
ARNOLD KIMSEY KING, A.M., *Associate Professor of the Teaching of History*
SAMUEL THOMAS EMORY, Ph.D., *Associate Professor of Geology*
JOHN WARFIELD HUDDLE, Ph.D., *Associate Professor of Geology*

* Absent on leave, 1939-1940.

REX SHELTON WINSLOW, Ph.D., *Associate Professor of Economics*
ROBERT JAMES WHERRY, Ph.D., *Associate Professor of Psychology*
RUSSELL LOWELL HOLMAN, M.D., *Associate Professor of Pathology*
GEORGE HAROLD LAWRENCE, A.M., *Associate Professor of Social Work*
JOSIAH COX RUSSELL, Ph.D., *Associate Professor of History*
JAN PHILIP SCHINHAN, Ph.D., *Assistant Professor of Music*
DONALD PAUL COSTELLO, Ph.D., *Assistant Professor of Zoology*
WERNER PAUL FRIEDERICH, Ph.D., *Assistant Professor of German*
JOSEPH EDISON ADAMS, Ph.D., *Assistant Professor of Botany*
ROBERT WHITE LINKER, Ph.D., *Assistant Professor of French*
FREDERICK EDWARD COENEN, Ph.D., *Assistant Professor of German*
ABRAM GUSTAVUS BAYROFF, Ph.D., *Assistant Professor of Psychology*
FRANKLIN CARL ERICKSON, Ph.D., *Assistant Professor of Geology*
WILLIAM H. IRWIN, Ph.D., *Assistant Professor of Petrology*
FLOYD THEODORE SIEWERT, M.A., *Assistant Professor of Physical Education*
ELWYN ARTHUR MAUCK, Ph.D., *Assistant Professor of Political Science*
NATHAN JACOBSON, Ph.D., *Assistant Professor of Mathematics*
GRANVIL CHARLES KYKER, Ph.D., *Assistant Professor of Biological Chemistry*
SHERMAN EVERETT SMITH, Ph.D., *Assistant Professor of Chemistry*
RUSSELL BERRY HANCOCK LYDDANE, Ph.D., *Assistant Professor of Physics*
CARL HAMILTON PEGG, Ph.D., *Assistant Professor of History*
CECIL JOHNSON, Ph.D., *Assistant Professor of History*
LOUIS OSGOOD KATSOFF, Ph.D., *Assistant Professor of Philosophy*
EDWARD ALEXANDER CAMERON, Ph.D., *Assistant Professor of Mathematics*
FRANK NORMAN LOW, Ph.D., *Assistant Professor of Anatomy*
ALLEN THOMAS BONNELL, Ph.D., *Assistant Professor of Economics*
WILLIAM LOUIS ENGELS, Ph.D., *Assistant Professor of Zoology*
IRWIN CLARK KITCHIN, Ph.D., *Assistant Professor of Zoology*
ROBERT DEVORE BOCHE, Ph.D., *Assistant Professor of Zoology*
HARRY DAVIS BRUNER, Ph.D., *Assistant Professor of Physiology*
WITOLD HUREWICZ, Ph.D., *Assistant Professor of Mathematics*
HAROLD BENEDICT GOTAAS, M.S. in C.E., S.M. in Eng'g., *Assistant Professor of Sanitary Science*
WILLIAM DECATUR PERRY, D.Ed., *Instructor in Education*
EDWARD CARL PLISKE, Ph.D., *Instructor in Anatomy*
AUGUSTUS TAYLOR MILLER, JR., Ph.D., *Instructor in Physiology*
GEORGE EDWIN MOWRY, Ph.D., *Instructor in History*

THE GRADUATE SCHOOL

INTRODUCTION

The Graduate School of the University of North Carolina is a logical outgrowth of the history of the institution, since an interest in research has from the beginning been a part of that history. To foster the spirit and practice of investigation was a fulfillment of the injunction in the Constitution of North Carolina, adopted in 1776, that "all useful learning shall be duly encouraged, and promoted in one or more universities." Chartered in 1789, the University before its formal opening in 1795, by acquiring apparatus by purchase in 1792, manifested its desire to promote scientific research in physics and astronomy. This same desire was evident when President Caldwell was sent in 1824 by the trustees to Europe to purchase books and additional scientific equipment. It has been stated that this interest "led to the establishment of the first astronomical observatory in the United States, to the first geological survey by public authority in America, and to the first equipment for the teaching of electricity."

Although the limited library facilities in the early days made possible little research achievement in the humanities, in science the work accomplished won respect in and out of the State. Members of the faculty during the first seventy-five years of the University's history were authors of textbooks and scientific monographs. After 1876 publications of this type became more numerous, and several research societies were established at the University, the proceedings of which were published in the learned journals maintained by the institution. In days of limited equipment and of inadequate income, remote from great libraries and laboratories, working under conditions that would have quenched a spirit less vital, members of the University were, nevertheless, impelled to devote themselves to research. For more than a century, therefore, the spirit of investigation has been a real element in the life of the University; it has constituted a tradition of rich value from which future work is to derive inspiration and authority.

No formal division of graduate study was established prior to 1876, although a plan for instruction leading as far, at least, as the master's degree was contemplated in the project of General William R. Davie, one of the founders of the University. After the fashion of the day, it was possible for a member of one of the so-called learned professions to obtain a master's degree on the basis of experience and on that of

successful practice of the profession. Advanced work was offered, however, and higher degrees in course were granted. The Catalogue of 1854 laid down a rule for such work.

BEGINNINGS OF GRADUATE WORK

Following the Civil War and during a part of the distressing period of Reconstruction the doors of the University were closed. With the reopening of the institution in 1875, the authorities proceeded almost immediately to establish graduate study as a recognized University enterprise. The Catalogue of 1876 announced that post-graduate courses leading to advanced degrees would be offered. The regulations governing the master's degree were as follows:

> The Master's Degree will be open to any Post-Graduate who has taken the Bachelor's Degree in the same Courses in the University or in any institution whose requirements are equal to our own, provided he shall pass one year in post-graduate studies at the University, shall pass his examinations and present a satisfactory thesis on some subject within the department of study especially pursued.

It will be readily appreciated that in this brief statement were incorporated sound principles. In 1877, the degree of Master of Arts, Master of Science, and Doctor of Philosophy were announced. They were to be conferred only "upon rigid examinations on prescribed courses." The degrees of Master of Arts and Doctor of Philosophy were awarded under this new system in 1883. In 1885 a further significant step was taken to effect a formal separation of graduate and undergraduate work, and courses open only to graduate students were listed in the fields of constitutional law, political economy, classical languages and literature, English language and literature, French, German, mathematics, chemistry, natural philosophy, geology, botany, and zoology.

At about the same time (1883) the impulse to further research at the University gained new strength through the establishment of the Elisha Mitchell Scientific Society. For the first three years the Society published annual volumes of proceedings; afterwards the journal became a quarterly. From the first the society has emphasized original research on the part of professors and advanced students and has been an aid to scientific work at the University. The Philological Club established an annual record of research, called *Studies in Philology,* in 1906. The *James Sprunt Studies in History and Political Science,* founded in 1899, gave opportunity for the publication of the results of research in history, particularly in the history of North Carolina.

The establishment of these three learned journals in the fields of science, history, and philology, together with the activities of the research clubs which have held regularly scheduled meetings now for many years, afforded a great stimulus to investigation at the University and increased recognition of the importance of graduate work.

In 1904 the graduate department was formally organized as a distinct school of the University and the late Professor C. Alphonso Smith was appointed as its first dean.

JOURNALS OF RESEARCH

Five journals devoted to research in different fields of learning are maintained by the University. *The Journal of the Elisha Mitchell Scientific Society,* now in its fifty-sixth volume, has published a very large number of scientific papers, particularly in chemistry, botany, and zoology, and is regarded in this country and abroad as one of the most distinguished journals of its kind. The *James Sprunt Studies in History and Political Science,* now in its twenty-fourth volume, is a series of original papers, chiefly on North Carolina history, contributed by professors and advanced students in the Departments of History and Political Science. *Studies in Philology,* now in its thirty-seventh volume, originally was limited to the publication of research in philology carried on by members of the language departments at the University. In 1915 it became a quarterly, and now admits to its pages articles by scholars in other universities as well as by members of the language departments of the University. In April of each year it publishes a series of papers dealing with English literature of the sixteenth and seventeenth centuries, called "Elizabethan Studies." The journal is now recognized as one of the foremost American journals of philology. *The North Carolina Law Review* and *Social Forces* were added to the list of research journals published by the University in 1922, and all these journals are now issued by The University of North Carolina Press, established in 1922.

The University News Letter, now in its twenty-sixth year, is devoted to research studies dealing mainly with economic, social, and civic affairs in North Carolina.

THE UNIVERSITY PRESS

In addition to the journals of research, The University of North Carolina Press publishes books and monographs of research, as well as textbooks and general literature. The major purpose of the Press is to give the University standing in the field of publishing commensurate with its standing in

the field of teaching and investigation. It also provides, through books as well as through the scholarly journals, for the publication of the results of investigations carried on by members of the faculty and advanced students. But it is by no means limited, in accepting manuscripts, to work submitted by members of the University group. Books of distinction by scholars connected with other institutions may be published by it; thus the Press is a valuable aid in the development of that aspect of the University's service which has to do with the advancement of learning.

THE LIBRARY

The University Library occupies a new building, the first and principal unit of which was completed in July, 1929. This unit, constructed and equipped at a cost of $625,000, has a capacity of half a million books and about a thousand readers, in addition to work space for the library staff. Special arrangement has been made for graduate students in the provision of 162 carrells in the bookstacks for individual study, and seminar rooms on the third floor for study and discussion.

General Library. The general library contains over 375,000 volumes, constituting one of the largest collections in the South. It has been built up with great care, the purpose being to make of it an effective working library, a laboratory for the use of students in those departments in which research must be carried on mainly by means of books, as well as an instrument contributing to general culture. The collection increases at the rate of from 15,000 to 20,000 volumes a year, through gift and purchase. Notable among the special collections is that of North Caroliniana, which contains several thousand volumes and constitutes the most complete library of North Carolina history and literature in existence; the chemistry collection, which in number of complete sets of American, English, German, French, and Italian periodicals is unequaled in the South; the rural social-economics collection; the English collection, which contains the complete publications of most of the important societies interested in the study of English language and literature, the C. Alphonso Smith library of Southern literature, the Archibald Henderson collection of American Drama, and the Pendleton King collection chiefly in the Romance languages; the Nash collection of books relating to Romance languages and literature; and the Elisha Mitchell Scientific Society collection, comprising the exchanges received since 1884 from more than two hundred of the leading scientific societies throughout the world. The collection of the Hanes Foundation for the Study of the Origin and Devel-

opment of the Book comprises over 489 incunabula; a considerable collection of critical apparatus for the study of rare and early books; 600 books illustrating the development of printing from the fifteenth century to the present day; a collection of Babylonian and Sumerian clay tablets, and other materials depicting the development of the written record. The Hunter Collection of Manuscripts and Rare Books contains 100 incunabula and 1,000 manuscripts ranging from the fifteenth to the seventeenth century.

A grant from the General Education Board in 1931 has enabled the Library to acquire a valuable bibliographical collection. Many catalogues of notable libraries, national bibliographies, periodical indexes, subject bibliographies, and monumental sets of source materials were added to the Library's already extensive holdings in this field.

A further grant in 1936 provided for intensive development of research materials in the biological sciences, physics, chemistry, social sciences, and English literature.

Departmental Libraries. The Law Library, containing 42,500 volumes, is in the building occupied by the School of Law. It contains material useful to students of history and government. Advanced students also have the privilege of using the valuable manuscripts of the State Historical Commission and the State Library at Raleigh. The School of Commerce and the Department of Economics maintain a reading room in the general library building adjacent to the bookstacks containing relevant books. It receives 320 trade and financial journals, including the leading publications in this field.

The University Library receives about 4,367 periodicals annually. The learned journals which record contemporary research in all the great fields of investigation, such as the sciences, history and economics, philosophy and sociology, classical and modern foreign languages and literatures, and English philology, folklore, and literature, are available. The Library is a member of important philological, bibliographical, and scientific associations, and receives their publications regularly. Bound volumes of most periodicals of permanent worth are available from the beginning of their publication, constituting a working collection of great value to advanced students. The Library also receives the publications of such organizations as the Smithsonian and Carnegie institutions, the Rockefeller Foundation, and the Russell Sage Foundation, and of many universities, including foreign universities, which issue monographs of advanced research. It enjoys the privilege, through an inter-library loan arrangement, of borrowing

from other libraries, for the use of graduate students, publications which it does not possess. Through exchange of card catalogues and a daily delivery service, the resources of the Duke University Library are readily available. Included in the Duke Catalogue also are cards covering special collections in other libraries of the State. The Library is the regional depository of the catalogue cards issued by the Library of Congress, is a full depository for United States government documents, and has an important collection of State and foreign documents.

Graduate students are given, on application, cards of admission to the bookstacks so that they may have immediate access to the resources of the library.

THE INSTITUTE FOR RESEARCH IN SOCIAL SCIENCE

The Institute for Research in Social Science was organized in 1924 with the appointment by President Harry Woodburn Chase of a Board of Governors composed of representatives from the fields of history, government, economics, sociology, rural social-economics, publications and library administration, and educational psychology. This Board being flexible, new members being recommended by the Board of Governors and appointed by the President, was later augmented to include additional representatives from history, political science, and economics, to which was added the Dean of the School of Law. In 1933, after the organization of the Consolidated University to include the University at Chapel Hill, the Woman's College at Greensboro, and the State College of Agriculture and Engineering at Raleigh, representatives of the last two institutions were added to the Board.

The present plan of organization of the Institute provides for a Director, an Assistant Director with an assignment as Research Associate, and a Central Office with an adequate clerical staff through which assistance is rendered to Institute members and faculty members and through which a central coordinating agency has been set up. The research staff of the Institute is composed of full-time research professors, research associates, and research assistants, in addition to part-time assignments made to individuals in accordance with the research programs adopted and followed out from year to year.

The functions of the Institute are various. First, to encourage and stimulate research in the social sciences at the University of North Carolina; second, to discover, develop, and train research and teaching personnel within the region; third, to map out and plan for a research program which will focus

upon regional problems and regional research; and, fourth, to serve as a center for cooperating with other agencies and organizations in the field. To carry on and to coordinate these objectives, it is the specific function of the Board of Governors to plan, legislate, and give general direction to the Institute program, while the Director and the Assistant Director of the Institute, together with the President of the University, are authorized to carry on details of administration, to supervise any general research activities and projects coming under the general direction of the Institute, and to cooperate with particular faculty members or other directors of specific research projects.

The relation of the Institute to the University is more nearly analogous to the schools and major divisions of the institution. Its research professors and research associates have the rank of professors and associate professors in the University with all their privileges and obligations, but with the general allocation of two-thirds time devoted to research with one-third time devoted to teaching. The principal sources of financial support have been the endowed Foundations (The Rockefeller Foundation, General Education Board, Laura Spelman Rockefeller Memorial), with additional funds from other agencies and individuals, with specially allotted funds on occasion, and from the University. There have been substantial returns from the Institute's publications of which more than 70,000 copies have been distributed.

Types of research aid have extended over a wide range. Due to a "planned" research program for a particular state and regional setting with particular opportunities, one of the first needs was to provide research specialists for certain fields, to give them desirable status, and to provide adequate assistance for them. Closely correlated with this, a second type of research aid is that of research assistants, on annual appointment, whose function it is to aid either research professors and associates or to be assigned to aid other university professors in the prosecution of research projects accepted by the Institute. The duties of these research assistants are clearly differentiated from those of university fellows in that the assistant's task is to help in a particular problem to which he is assigned as opposed to the principle of the fellowship in which the money is allocated to the individual to help him in his own work. A third type of assistance is that rendered to individual professors in the several departments of social science in the prosecution of scholarly research or publication.

The studies and materials of the Institute may be grouped under the general categories of southern regional research in

the following fields: general regional culture and economy, population, local government, historical backgrounds, socio-economic activities (including studies in social-industrial relationships), crime and criminal justice, the Negro, folklore and folk backgrounds, social institutions, public welfare, human geography, and regional planning. In addition to the continuation of these types of studies the Institute is focusing upon two major projects. One is to follow up the comprehensive picture of the Southern Regions with a similar adequate study of The Southern People. The second is the Group-of-Counties Subregional Laboratory of social research and planning.

To date, the Institute has cooperated in publishing more than 50 books and monographs, while four times as many articles have resulted from Institute studies. In the files of the Central Office are some 225 manuscripts, classified under more than thirty-five specific fields of research, growing out of the Institute program.

The policy underlying the general planning and execution of research programs and projects has tended to emphasize, in addition to the state and regional laboratory factors, long-time research, susceptible, however, to units available for shorter-time completion and commensurate with the personnel and resources available. Although projects are selected with a dominance of state and regional subjects, priority is given to those subjects which would have generic value in both the practical results and the possible methodology which might be evolved.

Additional information and application blanks for appointment to research assistantships may be obtained by writing to the INSTITUTE FOR RESEARCH IN SOCIAL SCIENCE, The University of North Carolina, Chapel Hill, North Carolina.

SITUATION AND GENERAL ADVANTAGES

The University is situated at Chapel Hill, twelve miles from Durham, thirty miles from Raleigh, and fifty miles from Greensboro. It may be reached by one of the bus lines which maintain frequent schedules from Durham, Raleigh, and Greensboro. It is near the center of the state, midway between the mountains and the sea.

Several endowed lectureships are maintained by the University. The McNair Lectureship, founded in 1906 by the will of John Calvin McNair, of the class of 1849, provides for an annual series of lectures by visiting scholars of distinction, and for the publication of the lectures in book form. The Weil lectures in American Citizenship, founded by Mr. Sol Weil and Mr. Henry Weil of Goldsboro, were inaugurated by former President William Howard Taft in 1914-1915.

In addition to these special courses and lectureships, a student lecture course provides each year many single lectures by well-known people. Some of these are of scholarly nature; others are popular. There are many entertainments of various kinds under the direction of the University. Notable among these are the Sunday afternoon recitals conducted by the Department of Music, the concerts and recitals by various University musical organizations, and the productions of dramatic work by The Carolina Playmakers. The plays are written by students and are produced by them, under the direction of Professor Koch, at The Playmakers Theatre.

In the various departmental clubs students engaged in work in special fields find opportunity for the discussion of problems of mutual interest. The Graduate Club, an organization directed and controlled by the graduate students for the purpose of discussion of common interests, meets monthly and affords an opportunity for social intercourse and the development of an *esprit de corps* among graduate students. All graduate students are eligible for membership.

UNIVERSITY CONSOLIDATION

By act of the General Assembly of 1931, the University of North Carolina at Chapel Hill, the North Carolina State College of Agriculture and Engineering at Raleigh, and the North Carolina College for Women at Greensboro were consolidated as the University of North Carolina. One of the objects of this legislation was to effect a coordination and unification of graduate work. The accomplishment of this purpose is in process. Already plans have been perfected enabling the institutions of the University system to cooperate in giving graduate instruction in certain fields, leading to both the master's and the doctor's degrees. In addition to this cooperative instruction, involving mobility of students, or faculty, some definite functions have been assigned to the respective institutions.

Regarding this allocation of functions the Trustees resolved in June, 1935, that "all graduate work in education, excepting vocational education at State College [is] to be at Chapel Hill." It was further resolved, at the same time:

"In the all-University graduate school graduate work as far as practicable to be concentrated at Chapel Hill and administered by a dean and graduate council organized on a functional basis and appointed by and responsible to the president. All doctor's degrees to be given as now at Chapel Hill but on the basis of the resources of the Consolidated University.

The master's degree in agriculture and forestry, the postgraduate or graduate degree in textiles and textile research, the professional or graduate degree in vocational education in agriculture and in industrial arts, and the professional, postgraduate, or graduate degrees in engineering to be given at State College under the authority of the dean and council of the graduate school.

The master's degree in home economics and the postgraduate, professional, or graduate degree in secretarial science to be given at the Woman's College.

All duplication of supporting departments on the graduate level to be reduced to a minimum through mobility of students and faculty."

In the President's report to the Trustees, May 30, 1936, the following was stated in respect of graduate work in the University System:

"At the University in Chapel Hill we have the concentration of graduate work in the humanities, natural sciences, and social sciences. At Chapel Hill are to be administered and given all doctor's degrees, whether through the resources here or through our consolidated resources, and all other graduate, postgraduate, and professional degrees except the professional, postgraduate, or master's degrees in home economics and secretarial science at the Woman's College, and in agriculture, forestry, engineering, textiles, and vocational education at State College.

We can, through our consolidated graduate resources of all three institutions, the cooperation of the Central Agricultural Experiment Station at Raleigh, the Institute for Research in the Social Sciences at Chapel Hill, the University Press, the Agricultural Extension Division at State College, and the Extension Divisions of all three institutions consolidate a research and extension program for knowing the needs, developing the resources, advancing the opportunities, and enriching the life of all the people of our state. . ."

"On top of the college of arts and sciences, the school of commerce, the school of public welfare, the division of education, the library school, the division of public health, and the professional schools of law, pharmacy, and medicine, forever, I trust, to be preserved in Chapel Hill, is this consolidation of graduate work to the highest reaches of the humanities, the natural and exact sciences, and the social sciences. With no sacrifice of standards and values, the graduate school is rather to be advanced in its graduate distinction in the world of scholarship, teaching, and high research, and in its scientific, economic, social, and spiritual services to our state and region and the generations to come."

ORGANIZATION OF THE GRADUATE SCHOOL

Work for advanced degrees in the University of North Carolina is under regulations and principles established by the graduate faculty. The immediate direction of the Graduate School is in charge of an administrative board, of which the Dean is chairman, consisting of ten members of the faculty who represent the four divisions under which the courses offered by the graduate faculty are listed.

These divisions, with the departments constituting each, are as follows:

I. *The Division of the Humanities.*

The Department of Classics.
The Curriculum in Comparative Linguistics.
The Department of Dramatic Art.
The Department of English.
The Curriculum in Folklore.
The Department of General and Comparative Literature.
The Department of Germanic Languages and Literatures.
The Department of Music.
The Department of Romance Languages and Literatures.

II. *The Division of Philosophy and of Political and Social Sciences.*

The Department of Economics and Commerce.
The Department of Education and Physical Education.
The Department of History.
The Department of Philosophy.
The Department of Political Science.
The Department of Social Work.
The Department of Sociology.

III. *The Division of Mathematics and the Sciences.*

The Department of Anatomy.
The Departments of Bacteriology and Pathology.
The Department of Biological Chemistry.
The Department of Botany.
The Department of Chemistry.
The Department of Geology.
The Department of Mathematics.
The Department of Pharmacology.
The Department of Physics.
The Department of Physiology.
The Department of Psychology.
The Department of Zoology.
The School of Pharmacy.

IV. *The Division of Public Health.*

ADMISSION AND OTHER INFORMATION

Admission

Holders of the bachelor's or master's degree from approved colleges are admitted to the Graduate School upon presentation of official credentials and without examinations. If the institution from which the candidate comes is a member of the Association of American Universities or is recognized on the approved list issued by that association, no special conditions are imposed, except that the undergraduate record must show the creditable completion of an amount of work in the special field in which the student proposes to continue his work sufficient to constitute an undergraduate major. In case of insufficient preparation, or of transfer to a different department, certain prerequisite courses will be prescribed which do not carry graduate credit.

Students holding degrees from institutions not included in the membership of the Association of American Universities, or on its accredited list may be admitted, provisionally. Such students may qualify as candidates for higher degrees, with the approval of the department and the administrative board, on the satisfactory completion of whatever prerequisite or additional work may be assigned, and after demonstrating, through records in graduate courses taken in one or more quarters of residence in the Graduate School, that they are qualified to do advanced work.

Applications for admission to the Graduate School, accompanied by full credentials in the form of transcripts of academic records, should be filed in the office of the Dean at least thirty days in advance of the quarter in which admission is sought.

Formal application for admission to candidacy for an advanced degree is required. This application may not be filed earlier than the first week of the second quarter of residence. It must be approved, in candidacy for a master's degree, at least five months before the degree is conferred; in the case of the doctorate, at least one academic year in advance. Approval of the application is dependent on the work of the student in the Graduate School prior to the time when the application is filed; on the certification, by the major department, that the student is qualified to continue advanced work, with a program of work prepared in satisfaction of the requirements for the degree; on the presentation of certificates of proficiency in the foreign languages required for the degree; and on the removal of any special conditions imposed by the department or by the administrative board.

It should be noted that this distinction between admission to the Graduate School and admission to candidacy for a degree does not necessarily involve any extension of the time required for the degree. Properly qualified students will register at once, with the approval of the departments interested, for such advanced courses as they wish to take, and all advanced courses completed according to the rules for graduate work will be credited toward the degree.

Fellowships and Other Aids

Twenty-six University fellowships, each with a stipend of $500, are available to graduate students. These fellowships are payable in nine monthly installments, beginning in October of the year for which they are awarded. Holders of these fellowships are expected to perform part-time services as teachers or laboratory assistants in the departments to which they are assigned. This department must be the major department of graduate study, and each holder of a fellowship will be required to pursue advanced courses in the department during his term as fellow.

Fellowships are awarded only to those who present satisfactory records as students and who give promise of being able to carry on advanced work with distinction. Teaching experience is desirable, but is not required.

Fellows are not permitted to hold any other office or position connected with the University, and they may not occupy any position outside the University during the term of the fellowship, or engage in any work for pay without the written permission of the Dean.

Correspondence in regard to the teaching fellowships may be addressed to the Dean or to the head of the department in which the candidate proposes to do his major work. A special form of application, to be secured from the Dean's office, must be filed before March 1. Elections to fellowships will be made by the administrative board of the Graduate School, on nomination by the department to which the fellowship is to be assigned. Since the University is a member of the Association of American Universities, the rules of that Association in regard to fellowships are followed.

Several University scholarships, available to both men and women, are open to candidates in any department represented in the Graduate School.

A limited number of appointments as teaching assistants are also available. The stipend ranges from $450 to $800. They require approximately half-time teaching, the remainder of

the time being devoted to advanced study in the department in which the appointment is held. Application for assistantships should be made to the head of the department concerned or to the Dean.

Special Fellowships

In addition, two fellowships—the Graham Kenan Fellowships—carrying stipends of $700 each are open to men and women who wish to have their majors in philosophy; and one, the Ledoux Fellowship, with a stipend of $300, to students with majors in chemistry.

Loan Funds

The general loan funds, announced in the University catalogue, are open to graduate students. Applications, approved by the Dean of the Graduate School, should be made to the officer in charge of student loans.

Tuition and Fees

The University reserves the right to make, with the approval of the proper authorities, changes in any fees at any time.

Tuition for Residents of North Carolina

For residents of North Carolina the charge for tuition is $1.65 a quarter hour. The usual load for graduate students is fifteen hours a quarter.

Tuition and Reciprocal Fee Rates for Out-of-State Residents

Each student whose bona fide residence has not been established in North Carolina for at least six months immediately prior to his first registration in the University must pay an extra reciprocal charge for each fall, winter, or spring quarter he spends in residence. The residence of a minor is that of his parents or guardian. The residence of an adult remains with his parents unless he shall have independently set up his own.

Students are presumed to know their correct residence status and to state the facts concerning it on their application and registration blanks. Students in doubt as to their residential status should apply to the Dean of Administration for information.

The amount of extra charge to each out-of-state resident is based upon a modified reciprocal plan; i.e., it is based upon the average charges to non-residents attending similar institutions in the area of the student's residence. The resulting

rate of charge including tuition and reciprocal fee for out-of-state residents is as follows:

For residents of:

Alabama, Arkansas, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Mississippi, South Carolina, Tennessee, Virginia, and West Virginia.....$3.65 for each quarter hour

Arizona, New Mexico, Oklahoma, Texas.....$3.65 for each quarter hour

Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont .....$6.00 for each quarter hour

Indiana, Illinois, Iowa, Michigan, Minnesota, Missouri, Ohio, Wisconsin .....$3.65 for each quarter hour

California, Nevada, Oregon, Washington.....$3.65 for each quarter hour

Colorado, Idaho, Kansas, Montana, Nebraska, North Dakota, South Dakota, Utah, Wyoming.....$3.65 for each quarter hour

All other registrants: .....$6.00 for each quarter hour

(All the above figures are exclusive of laboratory and incidental fees.)

Incidental Fees for Each Quarter

These fees are payable by both North Carolina and out-of-state residents.

*Matriculation	$20.00
**Student publications	2.30
Laundry Deposit	8.50
Student Union Fee	1.00
Total for each quarter	$31.80

Room and Board

The Smith Dormitory has been reserved as a Graduate Club and provides living quarters and club rooms for fifty-one men graduate students. Residence in this building carries with it for graduate students membership in a club, and this membership obligates graduate students to eat in the club dining room which is operated on a cooperative basis and

* This fee includes fee for physical education, the library fee, the fee for infirmary service, the fee for registration costs, the fee of debates, and membership fee in the Athletic Association.

** This fee includes the following items: *Daily Tar Heel* $1.28, *Yackety Yack* .54, *Buccaneer* .23, and the *Carolina Magazine* .25.

which is located in the building. Board usually costs around $25.00 a month. The arrangement pertaining to this building is thought of as distinctive. A self-governing and responsible student organization is in control of the management. The opportunity for friendly association is provided. The facilities of the lounge and dining room are also available for the social activities of other graduate students. Club and committee meetings may be held there.

Requests for room reservations in the Graduate Club should be addressed to the University Cashier, Box 690, Chapel Hill, N. C., and should be accompanied by a $6.00 reservation fee. Rooms are rented on the basis of the academic year. The amount of the annual rent is $90.00 for each person in a double room and $135.00 for a single room. For the convenience of the residents, the annual rent is payable in three installments: double rooms, September 1, $34.41; January 1, $29.12; March 15, $26.47; single rooms, September 1, $51.62; January 1, $43.68; March 15, $39.70. One-half of the reservation deposit is credited on the second installment and one-half on the third installment.

New Woman's Building (No. 3), the largest and most modern of student residences here, has been reserved for the exclusive use of women graduate and professional students. Rooms are rented on the basis of the academic year. The annual rent is payable in three installments which are due September 1, January 1, and March 15. The annual rent for each person ranges from $90.00 to $202.50, depending upon whether one occupies a double room, single room, or suite. The amount of each installment is determined by the annual price of the room and the length of each quarter. Application for a room should be made to Mrs. M. H. Stacy, Adviser to Women, Chapel Hill, N. C., and should be accompanied by a reservation deposit of $6.00.

All rooms are completely furnished. Students must provide their own pillows, bed linen (for single beds), blankets and towels.

The University operates, on a cost basis, the new University Dining Hall Cafeteria. Meal tickets are issued in denominations of $5.00. The average cost of three meals a day has been estimated at around $22.00 a month.

Room and board are available in town. Room rent ranges from $10 to $25 a month and board ranges from $22 to $35 a month for three meals a day.

The University Year

Four terms, or quarters, (including the Summer Session) of approximately eleven weeks each constitute the University year. In all of these terms graduate courses are offered, and students may register at the beginning of any term. The rules for admission and the requirements for advanced degrees in the Summer Session are the same as in the regular academic year. The master's degree may ordinarily be attained in three summer sessions or an equivalent amount of time within a period of six years.

General Regulations

The following regulations of the graduate faculty should be observed:

1. Undergraduates in this institution who plan later to undertake graduate study, and who have fulfilled all requirements for the bachelor's degree except one or two courses, may be allowed to enroll in certain courses with the idea of later obtaining graduate credit, provided the student is not registered in more than three courses for any purpose, and provided notice is given to the Dean of the Graduate School of the student's purpose. It will be the duty of the Dean to inform the instructor of the student's plan and to request of the instructor that work of a graduate character is to be accomplished by the student. The report from the instructor at the end of the course must certify that the student has performed work of graduate standard before credit will be allowed. The maximum amount of credit to be obtained in this way is that of two courses.

2. Credit for graduate work to be applied in satisfaction of requirements for the master's degree, not to exceed two full courses, may be transferred to the University of North Carolina from member institutions of the Association of American Universities. Such transfer must be recommended by the head of the department in which the student does his major work and is subject to the approval of the administrative board. This transfer does not reduce the minimum residence period.

3. Graduate students are subject to the same rules regarding faithfulness in performance of assigned tasks and regarding examinations and credit as students in other departments of the University. But graduate work presupposes a greater amount of time for research in the library or the laboratory; and the student, being more mature, is thrown more upon his own responsibility. For these reasons excessive registration is not permitted. The whole idea of graduate

work is comprised in a more intense specialization and therefore more complete investigation than is necessary or wise in undergraduate instruction. The administrative board will not count for credit toward a higher degree work done by students who are doing work toward a higher degree in any other graduate or professional school at the same period of time.

4. Grades for each course completed are reported to the Dean and to the Recorder. These grades are as follows:

Passed, which represents satisfactory work.

Failed, which represents work which is unsatisfactory for graduate credit.

No work falling below the standard represented by the grade of *Passed* is counted for graduate credit. No grade, on a mathematical basis, below 80 will be credited. If, in the judgment of the administrative board, the quality of the work done by any student falls below the standard expected of graduate students, the registration of such a student will be canceled.

5. The unit of work is the course, by which is meant, as a rule, a class meeting five times a week. Half-courses also are offered. In some courses open only to graduate students, such as the seminars and other research courses, the formal class exercises are modified. But all such work is credited in terms of courses and half-courses.

Students will not be permitted to register for more than three full courses in any one quarter.

Only work announced as open for graduate credit in this bulletin or that is approved by the administrative board may be counted toward the higher degrees.

Work done *in absentia* will not be counted for graduate credit, except that in certain cases approved by the department and by the administrative board, part of the work on the thesis for a higher degree may be done elsewhere, and except, further, that part of the work required for the degree of Doctor of Philosophy may, on recommendation of the major department and with the approval of the administrative board, be done at another university. But all such work, even when credited, is subject to examination at the finals required for the degree.

6. Work taken more than six years before the date at which the master's degree is expected may not be used to count for credit toward that degree; and work taken more than ten years before the Ph.D. degree is expected may not be counted for credit toward that degree.

7. Each graduate student works under the direction of a special committee established in the manner hereinafter described. The program and plan of study proposed by each graduate student must be approved by the chairman and by the Dean.

8. Teaching fellows, graduate assistants, and part-time instructors, whose time is partly devoted to service to the University, will be expected to take more than one year to obtain the master's degree. Such students in the Graduate School will not be permitted to carry more than six courses in any one academic year.

The effort is made to arouse in the minds of the students a feeling that graduate work is not a matter solely of attendance on classes and passing examinations on courses. He must see his work in its relations to a department of learning, not as a set of isolated units. In the more intimate personal relations to the advisory committee, too, he finds special values. He is a member of a small group; instruction is more nearly personal; he becomes acquainted with the method as well as with the content of learning.

THE GRADUATE DEGREES

The degrees under the supervision of the graduate faculty are Master of Arts (A.M.), Master of Science (S.M.), and Doctor of Philosophy (Ph.D.).

1. THE DEGREE OF MASTER OF ARTS

Prerequisites

For the degree of Master of Arts the general prerequisite is the completion of a course leading to the degree of Bachelor of Arts or, occasionally, the degree of Bachelor of Science in a college or university of standard grade. This course should have included special study in the department in which the graduate degree is sought sufficient in extent to constitute a proper preparation for the advanced work expected of candidates for the degree. If the undergraduate preparation has ben insufficient, the Graduate School and the department may prescribe certain preliminary courses before recommending a student for admission to candidacy for a higher degree. Such courses do not count for graduate credit, but become requirements for the degree in addition to the nine courses specified below.

Registration

Nine full courses of advanced character are required for the master's degree. To complete these courses at least three full quarters of residence are required. No course will be counted for the degree unless it appears in this bulletin or is approved by the administrative board. Such courses are of two classes only: those for graduates, and those open to graduates and advanced undergraduates. Courses of this second class are ordinarily open only to students of at least senior standing.

Courses of Study

Of the nine courses offered by candidates for the degree of Master of Arts, six shall constitute the major and three the minor. During the first quarter of residence, these courses will be selected by the heads of departments or by the chairmen of departmental committees on graduate studies. Thereafter the selections shall be made by the student's special advisory committee. These committees, consisting of three professors of the graduate faculty, shall be appointed by the Dean not later than the second quarter of residence. All course selections and study plans are subject to the approval of the administrative board. All courses, both major and minor, may be drawn from a single department, in case the department

offers courses which in good graduate practice are regarded as covering more than one field. When drawn from separate departments, six courses (the major) are to be selected from one department, and three (the minor) from one other. Ordinarily, major and minor courses should be selected from the same division (cf. p. 23). The decision as to choice of courses is determined by what appear to be the interests of the student. Departments and committees, however, will be expected to provide the student with a program of studies having a clearly defined relationship.

Other Requirements

The method of securing admission to candidacy for the degree and the relation of the candidate to his advisory committee are explained under the headings of Admission and of General Regulations.

A reading knowledge of at least one modern foreign language is required of candidates for the master's degree. This knowledge will be tested by a special examination given by the language department concerned, and must be certified to before the student is admitted to candidacy for the degree. (See pages 24, 39, 41).

New Curriculum in Education

The Administrative Board of the Graduate School in its meeting of May 30th, 1938, adopted a resolution authorizing two curricula leading to the master's degree for students offering a major in the Department of Education. The first, to be known as Plan A, is based upon existing requirements, including a reading knowledge of a modern foreign language. The second, to be known as Plan B, provides that, on recommendation of the Head of the Department and the student's adviser, the Graduate School may exempt the student from the obligation to pass an examination testing a reading knowledge of a foreign language. Students under this second plan will become candidates for either the degree of Master of Arts in Education or Master of Science in Education. It is expected that programs of study under Plan B will provide adequate training in statistical or historical methods and techniques of research.

The Master's Thesis

Besides the completion of advanced courses which constitute a unified plan of study, the fitness of the student for the degree is tested in two ways: by a thesis and by oral and written final examinations. The thesis tests the candidate's knowledge of the method of investigation and his ability to

make use of the knowledge he has acquired. The examinations test his knowledge of his special field by directing attention to the field as a whole, as contrasted with the course, which deals with a limited portion of the field.

The subject chosen for the thesis, having been endorsed by the chairman of the student's special committee, must be approved by the administrative board not later than two quarters before the time at which the degree is expected to be awarded. No change in subject or deferring of the time of approval will be permitted unless at least two quarters of residence intervene between the approval of the subject and the conferring of the degree, except that, with the permission of the administrative board, the thesis may be completed by a student not in residence who has satisfied the requirements as to courses. For a statement of the conditions under which such permission may be secured, see the General Regulations.

The subject of the thesis must be connected with the major, must be connected with a course or courses pursued in residence, and may count not to exceed one course. In case the courses offered by the candidate include a seminar, the purpose of which is to give aid in the preparation of the thesis, no credit will be given for the thesis *per se*. The thesis, in order to be approved, must be written in correct English and in scholarly form. It must show independent thought both in its recognition of a clearly defined problem and in its method of treatment. It must show the sources of information and a knowledge of the bibliography of the special field.

The thesis must be presented, in four copies, at least one month before the time at which the degree is expected to be conferred. All copies must be on paper of prescribed size and quality, and must observe the special rules of form established by the administrative board. A copy of the regulations for the form of theses and abstracts may be obtained on application to the Dean's office. An abstract must be submitted with the thesis; if the thesis is approved and the degree conferred, this abstract will be printed in a special bulletin of the Graduate School annually devoted to reports of research.

Examinations

Candidates for the master's degree are required to pass all examinations in courses with the grade specified under the general regulations given above. In addition, two special examinations are required. The first of these, a written examination on the field of the major, is to be set by the student's advisory committee and must be taken not earlier than the first month of the last quarter of residence. The second exami-

nation is oral, covering the entire work of the candidate, both major and minor, with a period of time especially reserved for the defense of the thesis. The examination is to be conducted by a special committee appointed by the Dean, consisting as a rule of the student's adviser as chairman and at least two other representatives of the major and minor subjects.

These examinations must satisfy the committee which has charge of them that the candidate possesses such knowledge of his major and minor fields as may reasonably be expected, that he can draw upon his knowledge with promptness and accuracy, and that his thinking is not limited to the separate units represented by his courses.

The special committees on theses and on the examinations will report their recommendations to the Dean at least one week before the end of the last quarter of residence. If the candidate's record in these respects is satisfactory, and if he has complied with all of the requirements for the degree, the Dean will report the student to the faculty for approval and recommendation to the board of trustees.

Commencement

Degrees are conferred at the annual commencement exercises of the University in June and at the close of the Summer Session in August. But a candidate may complete his required work, including examination and submission and acceptance of the thesis, at the end of any quarter or term. A student must be registered in the University in the quarter in which he is to be awarded a degree. If his work has been completed before that time, this requirement may be met by filling out the registration blanks without registering for specific courses. Attendance at the commencement at which the degree is conferred is required unless the candidate is specially excused by the Dean and the Dean of Administration of the University.

Summary of the Province of the Degree of Master of Arts

The rules and conditions governing the degree of Master of Arts set forth in the preceding paragraphs have certain well-defined aims. The degree is not a research degree in the sense that the candidate in every case is required in the thesis to make an original contribution to knowledge, although such a contribution in the thesis is regarded as the proper fruition of graduate endeavor. It is, however, a research degree so far as the individual student is concerned, since he is engaged in a technical study of a single field of learning, and this study culminates in work upon a single problem, the subject of his

thesis, in the solution of which he is required to give evidence of the mastery of graduate methods of investigation. He is concerned with the materials of learning, and with the organization and interpretation of these materials. Since the training is thought of as liberal, as great a latitude is permitted in the selection of courses as is compatible with the idea of a sharply defined field of major interest and with the requirement of interrelationship in the whole plan of study. The object is to make possible for the student a relative mastery of one of the liberal arts and to give him an introduction to critical scholarship and research method. A beginning is made in the training of the specialist; hence the correlation of courses, the oral and written examinations, and the thesis. Since there are many possible combinations of courses, the method of administration provides for personal supervision of a student's work by a special committee.

Development of precision and method in investigation and the cultivation of power of criticism and evaluation of evidence, together with the enlarged mastery of the subject matter of a defined field, constitute a training of indisputable value to the students who plan to enter the so-called learned professions or business or industry. Research is the way of progress in each activity.

The work outlined above can be done in one year by students whose preparation has been good and by those who devote themselves with application to this more specialized work. But two years are better than one and will yield correspondingly greater results. Especially is this true for young men and women who desire to prepare for high school and college teaching but who, instead of wishing to become active investigators, desire to become thoroughly trained as scholars. Part of their time may be spent in a study of courses and programs, and of methods of instruction applicable to their special subjects. Two years of study of this sort, if put on the right foundation, will give rich results, and in some cases such a course may be more useful than the course which leads to the doctorate. The graduate office and the administrative board will gladly plan work for the degree of Master of Arts on a two-year basis, and persons who complete such a course with distinction will be specially recommended for teaching positions of the better grade.

2. THE DEGREE OF MASTER OF SCIENCE

Prerequisites and Admission to Candidacy

The degree of Master of Science is offered after the completion of prescribed courses of study in any one of the follow-

ing departments: anatomy, biological chemistry, chemistry, commerce, geology, pharmacy, physics, and social work; by special arrangement in some other scientific departments. The prerequisite for the degree is a Bachelor of Science degree in the department of the major as offered at this institution, or equivalent work elsewhere. Before being admitted to candidacy the student must have completed the courses of study for the corresponding bachelor's degree as outlined in the General Catalogue of this institution.

Courses of Study

In general, the requirements in courses are identical with those of the Master of Arts degree, *i.e.*, of the nine courses required, six shall constitute the major and three the minor. The minor, however, must be in a separate department from the major. The thesis, which is required of all candidates for the degree of Master of Science, under certain conditions may be counted for one course credit. The following prescribed courses of study lead to the degree in the field indicated:

I. MASTER OF SCIENCE WITHOUT SPECIFICATION OF MAJOR FIELD.

Students holding the degree of Bachelor of Science from a standard college may proceed to the degree of S.M. by fulfilling the following requirements: six approved courses in some science (the major), three courses in an allied department (the minor).

For each of the following degrees the major must be taken in the designated field and the minor in a distinct but allied department.

II. MASTER OF SCIENCE IN ANATOMY.
III. MASTER OF SCIENCE IN BIOLOGICAL CHEMISTRY.
IV. MASTER OF SCIENCE IN CHEMISTRY.
V. MASTER OF SCIENCE IN COMMERCE.
VI. MASTER OF SCIENCE IN GEOLOGY.
VII. MASTER OF SCIENCE IN PHARMACY.
VIII. MASTER OF SCIENCE IN PHYSICS.
IX. MASTER OF SCIENCE IN SOCIAL WORK.

Other Requirements

The requirements regarding the thesis, examinations, committees, residence, and conferring of degrees are the same as for the degree of Master of Arts.

3. THE DEGREE OF DOCTOR OF PHILOSOPHY

The degree of Doctor of Philosophy is conferred only upon those who have completed, with high distinction, a period of extended study and investigation in a single field of learning during which they have gained control of the materials in the chosen field, have mastered the method of advanced study,

and have illustrated this method through a dissertation, the result of independent research, which adds to the sum of human knowledge or presents results that have enduring value. Neither the accumulation of facts, however great in amount, nor the completion of advanced courses, however numerous, can be substituted for this power of independent investigation and the proofs of its possession. While it is true that a well prepared student of good ability may secure the degree upon the completion of three years' study, it should be understood that this time requirement is wholly secondary to other considerations which will be explained in the following paragraphs. In some instances work done in other institutions may be counted toward the degree at the discretion of the committee in charge and the administrative board. (See p. 30). Under no circumstances will the degree be awarded until the student has been in residence at least three consecutive quarters.

Admission

The rules for admission to courses leading to the degree of Doctor of Philosophy, and for registration for courses in the first year of residence are the same as those stated above in the section on the degree of Master of Arts. (See p. 32).

Course of Study

At the time of admission the student should, with the advice of the head of the department or of the chairman of the departmental committee on graduate studies, elect a major field. As soon as a dissertation topic has been chosen and has been approved by the department and the administrative board, a special committee will be appointed, consisting of the professor under whom the dissertation is to be prepared as chairman and of four other members of the graduate faculty. This committee will prepare the tentative program of the student's study and will guide the research activity. Until the committee is appointed, selection of courses will be in charge of heads of departments or chairmen of departmental committees on graduate study. The special committee must be appointed before or at the time of the preliminary oral examination. All course selections and study programs are subject to the approval of the Dean and the administrative board of the Graduate School. Committees and departments will be guided by the following principles: (1) there shall be a major in some well-defined and recognized field, a mastery of which shall be the aim of the student and the requirement of the Graduate School. As the student will be held responsible for the whole field, he will take as many courses as may be re-

quired by the department concerned and the administrative board. (2) There shall be a minor, designated as such, consisting of six courses. These courses may be drawn from an allied department or from the department of the major. The latter program may be permitted only when the department offers recognized divisions of study other than those included in the accepted major in that department.

The work of the third year, or of such additional years as may be necessary, is primarily concerned with the writing of the dissertation or with special laboratory or research work. The department of the major or the student's special committee, however, may exercise the discretionary power of requiring that additional or supplementary courses be taken.

Teaching fellows, assistants, and instructors will be expected to take more than the minimum period of residence.

Requirements in Foreign Languages

Each candidate must pass examinations in two modern foreign languages, of which one must be French or German. The Graduate School approves French and German as the two foreign languages to be offered in satisfaction of this requirement. The department of the major may, however, on grounds of greater pertinence to the student's research interests and program of study, recommend any modern foreign language as a substitute for either French or German. The examinations in foreign languages will be given under the supervision of the appropriate language department. *The examinations in both foreign languages must be passed prior to the preliminary oral examination and prior to admission to candidacy.* The dates for these examinations are scheduled at least three times a year, one about November 15, one about March 15, and one about July 20. (See Calendar of Events). Special examinations may be arranged, for which a fee of $5.00 is charged.

The Dissertation

The subject chosen for the dissertation should have been approved by the department at the time of the preliminary oral examination. This topic must be approved by the administrative board before the student is admitted to candidacy for the degree. But work upon the dissertation, such as preliminary bibliographies and the collection of material, should be begun earlier than this. The dissertation is the fruit of thorough investigation of a definite problem and finds its value in the scholarly and workmanlike manner in which it is presented, in its contribution to learning, and in the mental power which the writer displays.

The dissertation must be presented, in four typewritten copies, at least six weeks before the time at which the candidate expects his degree. It must comply with the rules of form for theses prescribed by the administrative board, and abstracts must be supplied as under the rules for the master's thesis. The special committee, and such other professors as may be appointed by the Dean, shall examine the dissertation, and no dissertation shall be accepted unless it secures the unanimous vote of this committee.

Publication of the dissertation, except by abstract in the graduate bulletin, is not required by the Graduate School. The various journals published by the University afford opportunity for publication, at least in part, and such publication is expected.

Examinations

Not earlier than the end of the second year, and at least one academic year prior to the commencement at which the degree is expected, a preliminary oral examination shall be given by a special committee appointed by the Dean and by all members of the staff of the major and minor departments. This examination shall cover all the work of the two or more preceding years. No student will be admitted to candidacy for the doctorate until this examination has been passed.

At least four weeks before the end of the period of study a written examination must be passed by the candidate. The field to be covered by this examination shall be determined by the student's special committee.

The final oral examination must take place at least one week before the time at which the student is a candidate for the degree. In case the major department so desires, the student may undertake the oral in the major and the minor subjects separately. In no case, however, may a greater time than three months elapse between the two examinations. The committee to have charge of this examination is appointed by the Dean and includes the head of the major department with other members of the major and minor departments as assistants. The date and place of the examination shall be publicly announced, and the examination shall be open to any member of the graduate faculty. The final oral examinations on the major and minor fields may, on approval of the Dean, be separated from the defense of the dissertation.

Candidates whose record in courses, examinations, and dissertation is satisfactory will be reported by the Dean to the faculty for recommendation to the Board of Trustees.

Commencement

Attendance at the commencement at which the degree is conferred is required, unless the candidate is excused by the Dean and the Dean of Administration of the University.

SUMMARY OF THE REQUIREMENTS FOR HIGHER DEGREES

Master of Arts or Master of Science

1. A bachelor's degree from a recognized institution.
2. A minimum residence period of three quarters. All work credited toward degree must be completed within a period of six years.
3. A reading knowledge of one modern foreign language.
4. Application for admission to candidacy for the master's degree must be filed six months, or two quarters, before the date at which the degree is expected.
5. Nine graduate courses, six of which must be in the department of the major, and three in the department of the minor.
6. A written examination in the field of the major.
7. An oral examination covering the entire field of study.
8. A thesis.

Doctor of Philosophy

1. Admission is the same as for the master's degree.
2. A minimum of three years of graduate study, at least one of which must be at the University of North Carolina.
3. A reading knowledge of French and German. (See "Requirements in Foreign Languages," pp. 24, 39, 41).
4. Application for admission to candidacy for the Ph.D. degree must be filed one academic year, or three quarters, before the date at which the degree is expected.
5. A major covering adequately the field of major interest and at least six courses in a minor, which may or may not be in a different department.
6. A preliminary oral examination.
7. A written examination in the field of major interest.
8. An oral examination covering the entire field of study.
9. A dissertation.

PROFESSIONAL GRADUATE DEGREES

In the Spring of 1939, after a consideration lasting nearly two years, the Graduate School decided to authorize in such subjects as Education and Public Health certain graduate curricula which were designated "professional graduate degrees." The chief characteristic of these degrees is that the changes

made in requirements permit, it is thought, in greater measure the satisfaction of what are represented as professional needs than do the so-called conventional requirements. The most important modifications in the requirements and principles stated elsewhere in this catalogue as representing the conception of graduate work in this institution relate to (1) allowance of relatively greater dispersion in programs of study than is permissible under a strict application of the principle of interrelation, and (2) in place of a thesis the submission of one or more written reports or essays which in the judgment of an appropriate departmental committee demonstate appreciation and mastery of graduate methods of investigation.

In each curriculum leading to a "professional graduate degree" it is required that candidates undertake study of research methods appropriate to the subject involved. To this end the degree of Master of Education (M.Ed.) was experimentally authorized. The degrees of Master of Public Health (M.P.H.) and Master of Science in Public Health (S.M.P.H.) and Doctor of Public Health (Dr.P.H.) were established. For requirements for these degrees in Public Health see the special bulletin published by the Division of Public Health.

Notes on the Method of Numbering and Counting Courses

A *course* meets five or six times a week; a *half-course* meets three times a week.* Two hours of laboratory or field work count as one meeting. The valuation of each course is stated in parenthesis, following the title, in terms of quarter hours of credit. All work is credited toward degrees either as whole or as half-courses in accordance with the principles stated above.

Courses with a double number are completed in two quarters, and in general credit will not be given until both quarters have been completed.

Courses with three numbers require three quarters to complete, and in general credit will not be given for the work of one or two quarters only.

The letters *a, b,* and *c* refer to the quarter in which a course is offered, as *fall, winter,* and *spring,* respectively.

Courses numbered from 101 to 200 are for advanced undergraduates and graduates, from 201 to 400 for graduates only. Courses numbered 301 to 400 are research courses.

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* Certain half-courses meet one time a week for a period of two and one-half hours.

THE DEPARTMENT OF ANATOMY

Wesley Critz George, Professor.
Frank Norman Low, Assistant Professor.
Edward Carl Pliske, Instructor.

Graduate work in the Department of Anatomy is offered to meet the needs of those who for cultural reasons wish to secure an understanding of the organization of man and related animals and those whose professional interests require extensive morphological training. Those who enter upon the study of anatomical science as a profession usually find employment as teachers in colleges and medical schools and in research institutions of a medical nature.

Prospective candidates for advanced degrees in anatomy should be well grounded in zoology and must prepare themselves to read scientific French and German.

The courses are designed to give one a broad understanding of vertebrate structure and development and detailed familiarity with some one field and the methods of research in that field. The department is prepared to direct research in endocrinology, hematology, and vertebrate embryology.

Beginning with the school year 1939-1940, the Department of Anatomy has been housed in the new medical school building on Pittsboro Road. This is a modern fireproof building carefully designed and equipped to meet the needs of a school of the medical sciences. Ample research laboratories have been provided, and facilities will be made available for the necessary anatomical techniques.

The medical school library and the related departmental libraries contain the more important books and journals in the anatomical-biological fields. In addition the University has a daily exchange service with the Duke University library, and volumes may be obtained on loan from the Surgeon General's Library and from other important libraries of the nation.

Courses for Graduates and Advanced Undergraduates

101. CENTRAL NERVOUS SYSTEM AND ORGANS OF SPECIAL SENSE (6). Credit in the Graduate School: 1 course.

A special laboratory study of the gross and microscopic anatomy of the cord and brain. Each student is provided with prepared dissections of the human brain and a series of sections through the cord and the brain stem. A human brain is then given to each group of six students and by them dissected in order to correlate and systematize the principal points of emphasis. A practical examination tests the student's ability to locate the various tracts and nuclei.

Three lecture and six laboratory hours a week, winter quarter. $5.00 laboratory fee for non-medical students. Professor Low; Dr. O'Connor.

102ab. GENERAL HISTOLOGY AND ORGANOLOGY (10). Credit in the Graduate School: 1½ courses.

This course includes a study of the structure and activities of the animal cell, the histology and development of the tissues, and the microscopic structure of all the organs of the body except the central nervous system, which is studied in course 101. The work is based principally upon stained sections supplemented by demonstrations of gross organs from the cadaver and of preparations of living material. Considerable experience is given in the identification of sections from the various tissues and organs. *Five lecture and ten laboratory hours a week, fall quarter. $5.00 laboratory fee for non-medical students.* Professor George; Dr. Pliske.

103. EMBRYOLOGY (4). Credit in the Graduate School: ½ course.

This course covers: (a) The fundamental facts of early development of the vertebrate body, with laboratory study based principally upon whole amounts and serial sections of chick embryos; and (b) The development of body form, organ systems, some individual organs, and the fetal membranes of mammals. Students are supplied with serial sections of pig embryos. Serial sections of human fetuses from 2½ mm. to 27 mm. and a synoptic collection of whole human fetuses representing approximately every week of the gestation period are available for demonstration and study. *Three lecture and six laboratory hours a week, spring quarter. $5.00 laboratory fee for non-medical students.* Professor George; Dr. Pliske.

104. CYTOLOGY AND HISTOGENESIS (6). Credit in the Graduate School: 1 course. Prerequisite, Anatomy 102, Anatomy 103.

Those who have completed courses 102 and 103 or their equivalents will be offered an opportunity to pursue further work in cytology and histogenesis. Arrangements for this course may be made with the instructor. *Three lecture and six laboratory hours a week, spring quarter. $5.00 laboratory fee for non-medical students.* Professor George.

106. ADVANCED NEURO-ANATOMY (10). Credit in the Graduate School: 2 courses. Prerequisite, Anatomy 101 or equivalent.

The brain stem, basal ganglia, and the principal neuron pathways are modelled in plastic clay. Microscopic sections, photographs, and dissections of human brains are used as guides. Special emphasis is placed upon the function of the central nervous system. *$5.00 laboratory fee for non-medical students.* Offered in alternate years. Offered in 1939. Professor Low.

107ab. GROSS ANATOMY (20). Credit in the Graduate School: 3 courses.

The student dissects the body under the supervision of an instructor. Practical examinations are held on the cadaver. The subject matter is presented from the standpoint of development and function and attention is paid to surface and regional anatomy.

Each student is provided with a complete set of disarticulated bones. *Six lectures and sixteen laboratory hours a week, fall quarter; three lecture and six laboratory hours a week, winter quarter. $15.00 laboratory fee for non-medical students.* Professor Low; Dr. O'Connor.

108. APPLIED ANATOMY (3). Credit in the Graduate School: ½ course. Prerequisite, Gross Anatomy.

Lectures and laboratory talks are supplemented by demonstrations on the cadaver. Actual application of the methods of applied anatomy is accomplished by selected exercises and dissections involving analysis of anatomical problems. *Two lecture and two laboratory hours a week, spring quarter.* Professor Low.

109. ANATOMY OF THE ORGAN SYSTEMS (3). Credit in the Graduate School: ½ course. Prerequisite, Anatomy 101, 103, 107.

(a) Lectures on selected anatomical systems designed to correlate anatomical form and physiological function. (b) Supplementary readings and reports are assigned to the individual student. *Twenty lectures and assigned readings, spring quarter.* Professors George, Low; Dr. Pliske.

201. COMPARATIVE HEMATOLOGY (6). Credit in the Graduate School: 1 course. Prerequisite, Anatomy 102ab.

A microscopic study of the fresh and fixed blood and coelomic fluid from representative groups of the animal kingdom supplemented by occasional lectures and a study of original papers in the field. The purpose of the course is to acquaint the student with variations in the types of blood cells and the participation of these cells in the physiological processes of organisms. (1940-1941 and alternate years.) *Ten hours a week, spring quarter.* Professor George.

202. MAMMALIAN HEMATOLOGY (5). Credit in the Graduate School: 1 course. Prerequisite, Anatomy 102.

A study of normal and pathological blood cell morphology. Emphasis is given to studies on blood-forming and blood-destroying organs. Diagnosis and prognosis is stressed on the basis of blood cell morphology in considerations of pathological blood. *Ten laboratory hours a week, winter quarter.* Dr. Pliske.

301. EXPERIMENTAL ENDOCRINOLOGY (5). Credit: to be arranged. Prerequisite, Anatomy 102.

The student is assigned a problem involving the cytological alterations occurring under experimental endocrine stimulation or depression. The work includes preparation and examination of the tissue on the part of the student and ultimate description and interpretation of the results. *Ten hours a week, spring quarter.* Professor Low.

304. RESEARCH IN HEMATOLOGY (5 each quarter). Credit: to be arranged. Prerequisite, Anatomy 102, 103, and 201 or 202.

Research upon an approved problem in comparative or mammalian hematology. *Ten hours a week, one or more quarters, to be arranged.* Professor George or Dr. Pliske.

305. RESEARCH IN EMBRYOLOGY (5 each quarter). Credit in the Graduate School: 1 course each quarter. Prerequisite, Anatomy 102, 103, 107 or Zoology 103, 104, 105.

Research upon an approved problem in vertebrate embryology. *Ten hours a week, one or more quarters. Laboratory fee, $5.00 each quarter.* Professor George.

DEPARTMENTS OF BACTERIOLOGY AND PATHOLOGY

James Bell Bullitt, Daniel Allan MacPherson, Harold William Brown, Professors.
Russell Lowell Holman, Assistant Professor.

The following courses are accepted as satisfying requirements for minors in programs of study having majors in certain other sciences.

161abc. PATHOLOGY (17½). Credit in the Graduate School: 3 courses. Prerequisite, Histology, Bacteriology, and Physiology.

Embraces a consideration of general and special pathology from the chemical and physiological as well as the morphological aspects. Lectures and recitations are combined with laboratory work in a study of both gross and microscopical preparations. Each student is supplied with a set of "loan" sections (about 200) which forms the basis of the study. This is supplemented by the use of a considerable number of special demonstration sections. A series of practical examinations is held, in which each student is required to diagnose the process and describe the salient features in about fifty "unknown" sections. *Six hours a week, fall quarter; eight hours a week, winter quarter; twelve hours a week, spring quarter.* Professor Bullitt.

164. PATHOGENIC BACTERIOLOGY (10). Credit in the Graduate School: 1 course. Prerequisite, Chemistry 1, 2, 3, Bacteriology 51 or equivalent.

The early weeks of the course are devoted to a thorough grounding in the fundamental principles of bacteriology. Each student prepares the various culture media in common use; cultivates and describes several non-pathogens from stock cultures; and practises the more useful staining methods. Pure cultures are isolated from air and water and their biology studied. The major portion of the course is devoted to the detailed study of the pathogens. Unknown mixtures are used to test the student's ability to differentiate organisms of the various groups. Practical applications of bacteriology in the diagnosis of disease are stressed by the examinations of sputa, pus, feces, and blood. Animal inoculations are made to demonstrate the process of infection and the differentiation of certain organisms. Lectures cover all the more important diseases. *Twelve hours a week (lectures and laboratory), fall quarter. Laboratory fee, for non-medical students, $6.00.* Professor MacPherson.

165. INFECTION, IMMUNITY, AND SERUM DIAGNOSIS (5). Credit in the Graduate School: 1 course. Prerequisite, Bacteriology 164.

The early laboratory work is designed to demonstrate the basic principles of immunology and serology. Practical training is given in the production and use of agglutinins, precipitins, lysins, and complement fixing antibodies. Vaccines are prepared, and their use demonstrated. The preparation and standardization of antimicrobic and antitoxic sera are studied. Anaphylaxis and allergy are produced in animals, and methods of diagnosis and desensitization practiced. The student is required to prepare his own materials and to

inject and bleed animals himself. Special attention is given to the use of these principles in the diagnosis of blood stains, blood grouping, typhoid fever, typhus fever, diphtheria, tuberculosis, hay fever, gonorrhea, and syphilis. Unknown specimens test the student's ability to use the reactions. Lectures consider the principles of infection, immunity, and resistance. *Eight hours a week (lectures and laboratory), winter quarter. Laboratory fee for non-medical students, $6.00.* Professor MacPherson.

166. PUBLIC HEALTH AND HYGIENE (3). Credit in the Graduate School: ½ course. Prerequisite, Bacteriology 164.

Lectures and demonstrations designed to acquaint the student with general environmental sanitation, including sewage disposal, water supplies, and the hygiene of milk and food. Vital statistics, public health regulations, and various public health organizations are discussed. Arthropod vectors of disease and the important protozoa and helminths are considered. *Three hours a week, spring quarter.* Professor Brown.

167abc. ADVANCED BACTERIOLOGY (5½ each quarter). Credit in the Graduate School: 1 course each quarter. Prerequisite, Bacteriology 164 or its equivalent.

Opportunity and facilities are offered to qualified students to pursue advanced work in bacteriology and immunology. *Hours arranged.* Professor MacPherson.

DEPARTMENT OF BIOLOGICAL CHEMISTRY

JAMES CLARENCE ANDREWS, Professor.
GRANVIL CHARLES KYKER, Assistant Professor.

The Department of Biological Chemistry offers to graduate students training for entrance into the same general branches of the chemical profession as those described under the announcement of the Department of Chemistry (p. 55). In various phases of the medical profession there is constant need for well-trained biological chemists for both teaching and research. It would be difficult to enumerate the cases in which notable advances in modern medicine have resulted from the application of the fundamental principles of biological chemistry.

The industry of food production utilizes, in various ways, the services of individuals trained in the food phases of biochemistry. Training in chemistry of foods and dietetics as well as in general biological chemistry fits the students for better work in teaching home economics and dietetics and in bringing about a realization of the close connection between proper diet and health. Industries dealing with the production of foods and other products of plant and animal growth are employing to an increasing extent exact methods of chemical control and are utilizing the services of trained food and biological chemists for both factory control and research purposes. Biological chemistry is being used to an increasing extent in the study of bacteriology, and this department is cooperating with the Department of Bacteriology in teaching bacteriological chemistry.

In order to qualify for any of the various types of work mentioned above, at least the S.M. and preferably the Ph.D. degree should be sought. Candidates for either degree must be well trained in the fundamentals of chemistry and physics. Before beginning research they must be able to read scientific German with ease and, for the Ph.D. degree, must also have demonstrated a reading knowledge of French. In no case may formal research for the dissertation be undertaken until the necessary language examinations have been passed.

Candidates for the S.M. or Ph.D. degrees may take complete minors in either Chemistry or Physiology, the two departments whose work is most closely related to that of this department. Ph.D. candidates may also split the six courses of their minor between the above departments, a minimum of three courses being required in each. Regardless of the de-

partment in which the minor is taken, Physiology 141 and 142 are required of all Ph.D. candidates. In all other respects the general regulations of the Graduate School govern the work for graduate degrees.

The Department of Biological Chemistry is housed in the new Medical Building. Ample laboratory space and facilities for research are available. The library of the School of Medicine contains a wide selection of books and periodicals on biological and food chemistry and these library facilities are supplemented by the library of the Department of Chemistry housed in the nearby Venable Hall.

Courses for Graduates and Advanced Undergraduates

101. CHEMISTRY OF FOODS (6). Prerequisite, Chemistry 42, 61.

A course intended to familiarize the student with the composition, properties, and methods of analysis of the principal foods and the fundamental principles of dietetics. *Three lecture and six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professors Andrews, Kyker.

102-103. GENERAL BIOLOGICAL CHEMISTRY (6 each). Prerequisite, Chemistry 42, 61, 62, and 63.

A course covering the fundamental principles of biological chemistry, as applied to the metabolism of the animal body. To meet the needs of the medical students, of whom it is required, 102 contains more (3 class and eight laboratory hours) and 103 less (2 class and four laboratory hours) than the equivalent of a full course. The above rating represents an average of both quarters. The laboratory schedules can be modified to meet the needs of individual graduate students. Credit is not given for 102 unless 103 has been successfully completed. *102: three lecture and eight laboratory hours a week, winter quarter; 103: two lecture and four laboratory hours a week, spring quarter. Laboratory fee, $10.00 each quarter.* Professors Andrews, Kyker.

Courses for Graduates

201-202-203. ADVANCED BIOLOGICAL CHEMISTRY (6 each). Prerequisite, Biological Chemistry 102-103 or equivalent.

A study of special phases of biological chemistry designed to meet the needs of individual graduate students. Instruction consists of class room work, laboratory work, and references to literature. At least one quarter of this course is regarded as essential preparation for research in Biological Chemistry. *Equivalent of six hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 each quarter.* Professor Andrews.

211-212-213. SEMINAR (1 each). Prerequisite, Biological Chemistry 102-103 or equivalent, and a reading knowledge of German.

Discussions of current research topics in biological chemistry and related fields. Individual reports on the current literature are made by each student and general discussions of the topics under consideration are led by various staff members. *One hour a week, fall, winter, and spring quarters.* Professor Andrews.

301-302-303. RESEARCH IN BIOLOGICAL CHEMISTRY (6 each). Prerequisite, Biological Chemistry 201 or equivalent.

Intended for applicants for advanced degrees. The work entails research with frequent conferences and extensive use of the literature. The research subject for each student is adapted to his needs and capacity and is subject to the approval of the head of the department. *Equivalent of six hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 each quarter.* Professor Andrews.

DEPARTMENT OF BOTANY

WILLIAM CHAMBERS COKER, HENRY ROLAND TOTTEN, *JOHN NATHANIEL COUCH, Professors.
JOSEPH EDISON ADAMS, Assistant Professor.

For students well prepared in botany, opportunities are found in teaching, in the scientific work of the United States government and of state institutions, in special work in various phases of the subject, such as plant breeding, and with independent institutions. A master's degree in botany should prepare the student for positions in any of these fields. The doctor's degree is open to those who have the opportunity to prepare themselves for the more responsible positions. One teaching fellowship of $500 and several assistantships are open to students qualified to fill them.

Laboratory Equipment

The laboratory facilities are fully up to the standard of similar institutions, and funds are available for the purchase of any additional laboratory apparatus needed by research students in special subjects. Included in the equipment is a greenhouse, 15 feet wide by 80 feet long, which is a great aid in the production of plants for class use and for special research.

The department is prepared to guide students in research, particularly among the following lines: taxonomy and morphology of the lower plants, excluding bacteria; morphology and cytology of any group of plants except bacteria; and the constitution and distribution of the flora of the southeastern states.

The library of the department has in the last few years been greatly augmented along the lines of standard classical works of prime importance in research, particularly in the field of mycology. In this field the department library is more complete than that of any other southern institution. Particular attention has also been given to American publications in botany of historical importance. It contains a majority of the important botanical journals, as well as thousands of valuable books and reprints. The Coker Arboretum and the Soil Conservation Nursery of the United States Department of Agriculture are of much value to students in the study of special problems, and the surrounding country is particularly rich in a great variety of interesting plant life. The Herbarium, already quite valuable, has been greatly expanded and en-

* Absent on leave on the Kenan Foundation, winter quarter, 1939-1940.

hanced in value by the acquisition of the famous Ashe Herbarium (through the generosity of Mr. George Watts Hill) and the Harbison Herbarium.

The candidate for the master's degree is early given work requiring individual initiative, and a part of his program during the course consists of original work, with the preparation of his results in the form of a thesis. A reading knowledge of French or German is required.

Candidates for the degree of Doctor of Philosophy give most of their attention to the preparation of an advanced thesis, and must show ability to handle their subject in an original manner. A part of their work may be done during the summer at biological stations or other institutions, and visits to other libraries may be necessitated for the study of special literature.

Research in botany has included studies of the flora of the southeastern states, and of the classification and development of both lower and higher fungi. One volume on the trees of North Carolina and another, with illustrations, on the trees of Virginia, North Carolina, South Carolina, Georgia, and northern Florida have appeared. The second edition of this last work includes the trees of Tennessee. In addition to these, publications on fungi have included six books and numerous monographs of genera.

Courses for Graduates and Advanced Undergraduates

(Prerequisite, Botany 41 and Botany 43 or their equivalents.)

102 FUNGI (5).

A survey of the fungal groups including the true Fungi, Myxomycetes, and Lichens. *Two lecture and six laboratory hours a week, fall quarter, and equivalent hours in the first term of the Summer Session. Laboratory fee, $4.00 a quarter.* Professor Couch.

103. ALGAE (5 or 2½).

A survey of the Algae including both fresh water and marine groups. *Two lecture and six laboratory hours a week, winter quarter, and equivalent hours in the first term of the Summer Session if there is sufficient demand. Laboratory fee, $4.00.* Professor Couch.

104. BRYOPHYTES (5).

A survey of the Liverworts and Mosses. *Two lecture and six laboratory hours a week, spring quarter, and equivalent hours in the first term of the Summer Session if there is sufficient demand. Laboratory fee, $4.00.* Professor Couch.

111, 112, 113. ADVANCED WORK IN FUNGI (5 each quarter). Prerequisite, Botany 102.

The intention of these courses is to prepare students for research work in Fungi and to give a mycological foundation for work in plant pathology. The three courses on Fungi: Phycomycetes (111),

Ascomycetes (112), and Basidiomycetes (113), will be offered in successive quarters depending upon the needs of the students; but only two of the courses will be offered in any one school year. *Two lecture or report and six laboratory hours a week. Laboratory fee, $4.00 a quarter.* Professor Couch.

121. LIVERWORTS (5).

A study of the structure, growth, and classification of the Liverworts. *Two lecture or report and six laboratory hours a week, winter quarter. Laboratory fee, $4.00.* Professors Couch, Adams. (After the winter quarter of 1940 this course is to be merged with a course on Mosses into Botany 104. See above.)

133. MOSSES (5).

A study of the structure, growth, and classification of the mosses. *Two lecture or report and six laboratory or field trip hours a week, spring quarter. Laboratory fee, $4.00.* Professor Couch. (After the spring quarter of 1940 this course is to be merged with a course on Liverworts into Botany 104. See above.)

141. FERNS (5).

A study of the structure, growth, and classification of the ferns. *Two lecture or report and six laboratory or field trip hours a week, fall quarter.* Professor Coker; Miss Holland.

142. ADVANCED PHARMACOGNOSY (3). Prerequisite, General Botany and Botany 42.

Advanced work in the study of vegetable drugs; general methods in microanalysis of powdered drugs; preparation of materials for study; microanalysis of typical drugs and their adulterants and of mixtures. *One lecture and four laboratory hours a week, winter quarter. Laboratory fee, $4.00.* Professor Adams.

151, 153, s154. ADVANCED WORK IN THE STRUCTURE AND CLASSIFICATION OF SEED PLANTS (5 each quarter).

For each of these courses the student is required to collect, prepare herbarium specimens, and classify two plants each from twenty families of seed plants, with notes on the families and sketches to show the principal characteristics of one plant in each of these families. *Two conferences a week with the instructor, fall and spring quarters, and equivalent hours in the second term of the Summer Session. Laboratory fee, $4.00.* Professor Totten.

s155. DENDROLOGY (5 or 7½).

A taxonomic study of the woody plants of the southeastern states, with extensive field work. *Equivalent of ten or fifteen hours a week in lecture or report and laboratory or field work, second term of the Summer Session, if there is sufficient demand. Laboratory fee, $4.00.* Professor Totten.

156. PLANT GEOGRAPHY (3).

Discussion of the principles and problems of the geographic distribution of plants. *Three lecture or report hours a week, fall quarter.* Professor Adams.

157. PLANT ANATOMY (5).

Introduction to developmental anatomy of vascular plants, with some consideration of the phylogenetic aspects of the subject; consideration of and practice in methods of anatomical and cytological microtechnique. *Two lecture or report and six laboratory hours a week, spring quarter.* Professor Adams.

162. STUDIES IN THE HISTORY OF BOTANY (3).

Readings and reports. This course may continue for more than one year as the subject advances, credit being given for each repetition. *Three hours a week, winter quarter.* Professor Coker; Miss Holland.

Courses for Graduates

211, 212, 213, s214. PROBLEMS IN FUNGI (5 each quarter). For prerequisite work consult the instructor.

The student is expected to select a problem for investigation under the guidance of the instructor. It is recommended that the research be in the Phycomycetes or the Basidiomycetes, and in the special field of taxonomy, morphology, physiology, or genetics of fungi. (In the field of genetics Dr. Boche will help direct the students' work.) *Fall, winter, and spring quarters, and equivalent hours in the first term of the Summer Session. Laboratory fee, $4.00 each quarter.* Professors Coker, Couch.

251, 252, 253, s254. MORPHOLOGY OF SEED PLANTS (5 or 2½ each quarter). Prerequisite, Botany 157.

Advanced work in the embryology and anatomy of seed plants. The student is required to collect and prepare material for the microscopic study of special problems. These courses may be continued under the same numbers for more than one year as the subject advances, credit being given for each repetition. *Fall, winter, and spring quarters, and the second term of the Summer Session. Laboratory fee, $4.00 a quarter.* Professors Coker, Totten.

301, 302, 303. GRADUATE RESEARCH (5 or 2½ each quarter).

Original work with thesis under the guidance of the instructor. These courses may cover most of the work of the student for several years, credit being given each quarter in accordance with the work done. *Laboratory fee, $4.00 a quarter.* Professors Coker, Totten, Couch, Adams.

DEPARTMENT OF CHEMISTRY

Ralph Walton Bost, *Alvin Sawyer Wheeler, Frank Kenneth Cameron, James Talmage Dobbins, Horace Downs Crockford, Professors.

Floyd Harris Edmister, Oscar Knefler Rice, Edwin Carlyle Markham, Alfred Russell, James Edward Magoffin (Industrial Research), Associate Professors.

Sherman Everett Smith, Jonathan Wilbur Williams, Assistant Professors.

The student who chooses to make chemistry his profession may later wish to enter one of the following branches of the profession: (1) *Teaching in schools, colleges, and universities.* At present the work leading to the degree of S.B. in Chemistry fulfills the requirements of the State (except for the requirement of the courses in Educational Theory and Practice), but there is a strong tendency towards the requirement of the master's degree for the highest grade of teachers' certificate. For teachers in colleges and universities the work leading to the Ph.D. degree should be taken. (2) *For industrial chemists, consulting chemists, and chemical experts,* at least the A.M. or the S.M. degree and preferably the Ph.D. should be sought. The courses leading to these degrees may also provide thorough training in the allied sciences, physics, geology, mathematics, engineering, and biology, thus enabling the student to become an expert adviser for a corporation in developing and supervising its manufacturing plants, or to act as a consulting chemist in special problems. (3) *The national and state scientific bureaus* employ large numbers of chemists and are continually appealing to the universities for nominations to fill new positions. The best positions usually go to candidates with the Ph.D. degree. (4) *Research chemists* are employed by many private manufacturing establishments and by many semi-public research organizations which maintain well-equipped laboratories. In these, investigations are pursued which have for their end the improvement of old methods and processes and the invention and development of new ones. The proper training for such a career is the work leading to the Ph.D. degree.

The work of the graduate student who specializes in chemistry consists in part in the pursuit of advanced studies along fundamental lines, and in part in the experience of attempting to solve some research problem. The student learns at first hand the point of view and the methods of research chemists.

* Kenan Professor *Emeritus.* Died May 12, 1940.

At the present time a number of lines of investigation are being actively followed in this laboratory. Among these are:

(1) *Inorganic,* rare earth chemistry, x-ray analysis of crystal structure, determination of solubilities.

(2) *Analytical,* methods for detecting poisons, development of microscopic methods, separation of the metals, and methods for the quantitative determination of several elements.

(3) *Organic,* work on cymene, dihydroxynaphthalene, condensation reactions between diketones and semicarbazide and phenylsemicarbazide, Grignard reaction, oxidation of petroleum compounds and gum formation, chemistry of organic sulfur compounds, synthesis of chalcones, chemistry of the tanning process, preparation of new insecticides, antiseptics, hypnotics and antipyretics, polymerization, and organic molecular structure.

(4) *Physical,* heterogeneous equilibria, phase rule studies, physical constants of organic substances, work bearing on the theory of solutions, mechanism of gas phase reactions, viscosity and diffusion of gases and vapors, porous membranes.

(5) *Industrial,* utilization of sulfur dioxide in the recovery of merchantable phosphates, the hydro-metallurgy of copper, the production and utilization of cotton for cellulose, the removal of traces of iron from commercial grades of salt, the aging of rubber, the recovery of values from alunite, and the utilization of textile and other wastes.

The research experience gained in the graduate years is of inestimable value not only to the student himself but also to the educational institution or to the industry with which he later becomes associated. This is amply verified from the records of the positions held by the graduates of the University. Many have gone into the iron and steel industry; a number into the dye industry, either as supervisors of plan operation or as directors of chemical research. Others have gone into other industries, such as tobacco, corn products, general chemicals, and fertilizers. Several alumni are now in charge of large research projects at public and semi-public institutions.

The Department of Chemistry occupies Venable Hall of Chemistry, named in honor of Dr. Francis P. Venable, who was connected with the department for fifty years. This building has about 55,000 square feet of floor space, mostly of

modern factory construction, which with sky-light illumination is admirably adapted for laboratory use. The structure is fireproof. About thirty small individual research laboratories have been provided for the faculty and for graduate students. A very completely equipped shop, with the services of a full-time expert mechanician, and a full-time glass blower, is provided. A convenient supply of liquid air is available.

The chemical library and reading room, which connect with a seminar room where small advanced classes are held, contain many complete sets of the most important chemical periodicals, many books of reference, and a collection of books of historical value and interest, amounting altogether to about 10,000 volumes.

Fellowships and Scholarships

Ledoux Fellowship. This fellowship, awarded annually, is the gift of Dr. A. R. Ledoux of New York. The amount of the fellowship is $300. There are eight or more other fellowships, with stipends varying from $600 to $1000.

Attention is also called to three teaching fellowships open to graduate students who wish to defray part of their expenses by teaching elementary classes.

Some fifteen or more assistantships are also open to graduate students. The duties of the assistants include the preparation for and supervision of laboratory classes in the larger elementary courses, and also the examination of laboratory reports and service as oral quiz masters.

Applications for assistantships should be made by February 1, and for fellowships by March 1.

Graduate Degrees in Chemistry

The course leading to the degree of S.M. (or A.M.) in Chemistry is open to students who have graduated with a major in chemistry, or who have completed the equivalent of the courses in chemistry prescribed by the University for an S.B. degree. These courses are: Chemistry 31, 41, 42, 61, 62, 63, 181, 182, 183.

The course of work to be pursued by the candidate for a Master of Science degree is prescribed by the graduate faculty and consists of six approved courses from the Department of Chemistry and three approved courses from a distinct but allied department.

The general regulations of the Graduate School govern the work for the Ph.D. degree.

Courses for Graduates and Advanced Undergraduates

101. SPECIAL PROBLEMS IN CHEMISTRY (1 to 3). Prerequisite, to be determined by consultation.

Special assignments in library work, laboratory, or minor research. *One to three hours a week, every quarter. Laboratory fee, to be determined by consultation.* Any member of the departmental staff.

143. THEORETICAL ANALYTICAL CHEMISTRY (6). Prerequisite, Chemistry 31, 41, 42.

A detailed study of the reactions of all the common metallic and acidic ions from the standpoint of mass action, solubility product, and oxidation and reduction. This course is designed to give a comprehensive review of inorganic and analytical chemistry. *Six hours a week, winter quarter.* Professor Dobbins.

145. GAS ANALYSIS (3). Prerequisite, Chemistry 41, 42.

Quantitative analysis of gases by the Orsat Method, by thermal conductivity, and by low temperature fractionation. *Six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Markham.

146. INSTRUMENTAL ANALYSIS (3). Prerequisite, Chemistry 41, 42.

The application of such methods as colorimetry, nephelometry, and electrometric titrations. *Six laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Professor Markham.

147. QUANTITATIVE ORGANIC MICROANALYSIS (3). Prerequisite, Chemistry 41, 42, 63.

The course will include the use of the microbalance and involve such determinations as neutralization equivalent, Kjeldahl and Dumas nitrogen, carbon and hydrogen, halogens and sulfur, molecular weights. *Six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Markham.

148. INORGANIC MICROANALYSIS (3). Prerequisite, Chemistry 41, 42.

The course will include qualitative and quantitative analysis on milligram samples and an introduction to chemical microscopy and the use of the polarizing microscope. *Six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Markham.

151, 152, 153. ADVANCED INORGANIC CHEMISTRY (3 each). Prerequisite, Chemistry 181.

Three lecture hours a week, fall, winter, and spring quarters. Professor Edmister.

163. QUALITATIVE ORGANIC ANALYSIS (6). Prerequisite, Chemistry 61, 62, 63.

A study of the theory of solubility, homology, class reactions, and the functional groups in organic compounds. Individual substances and complex mixtures are studied. *Three lecture and six laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professors Bost, Russell, Williams.

164. QUANTITATIVE ANALYSIS OF FUNCTIONAL GROUPS (3). Prerequisite, Chemistry 163.

The quantitative determination of the common functional groups such as hydroxyl, carboxyl, amino, methoxy, nitro, ester, and similar groups. *Six laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Professors Bost, Russell, Williams.

165. ORGANIC COMBUSTIONS (3). Prerequisite, Chemistry 163.

The ultimate analysis of carbon, hydrogen, nitrogen, sulfur, and halogens, and certain other elements, by well established methods. *Six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professors Bost, Russell, Williams.

166a, 167a, 168a. ADVANCED ORGANIC CHEMISTRY (3 each). Prerequisite, or corequisite, Chemistry 163.

A topical course dealing with such subjects as stereoisomerism, carbohydrates, alkaloids, proteins, dyes, drugs, heterocyclics, terpenes, polynuclear compounds, theories of organic chemistry. *Three lecture periods a week, fall, winter, and spring quarters.* Professors Bost, Russell, Williams.

166b, 167b, 168b. ADVANCED ORGANIC PREPARATIONS (3 each). Prerequisite or corequisite, Chemistry 163.

Syntheses, identification, and studies in orientation. *Six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00.* Professors Bost, Russell, Williams.

181, 182, 183. PHYSICAL CHEMISTRY (6 each). Prerequisite, Chemistry 31, 41, 42, 61, 62, 63, and satisfactory courses in physics and calculus.

An introductory study of the properties and behavior of gases, liquids and crystals; elementary thermodynamics; homogeneous and heterogeneous equilibrium; solution theory; chemical kinetics; elementary principles of electrical conduction, galvanic cells, etc.; photochemistry and atomic structure. *Four lecture and four laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professors Crockford, Rice.

184, 185, 186. CHEMICAL THERMODYNAMICS (3 each). Prerequisite, Chemistry 181, 182, 183.

A study of chemical thermodynamics and electrochemistry with special emphasis on recent developments in these fields. (1940-1941 and alternate years). *Three hours a week, fall, winter, and spring quarters.* Professor Crockford.

191, 192, 193. INDUSTRIAL CHEMISTRY (3 each). Prerequisite, Chemistry 61, 62, 63.

The methods and economics of the chemical industries. *Three hours a week, fall, winter, and spring quarters.* Professor Cameron.

Courses for Graduates

231. DETECTION OF POISONS (6). Prerequisite, Chemistry 31, 42, 61, 62, 63.

The isolation from extraneous material, identification, and quantitative estimation of small quantities of the common industrial and

medicinal poisons. (1941-1942 and alternate years.) *Three lecture and six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Dobbins.

241, 242, 243. SEMINAR IN ANALYTICAL CHEMISTRY (3 each). Prerequisite or corequisite, Chemistry 143.

A critical study of the general principles and techniques used in analytical chemistry. (1940-1941 and alternate years). *Three hours a week, fall, winter, and spring quarters.* Professor Dobbins.

244, 245, 246. SPECIAL TOPICS IN ANALYTICAL CHEMISTRY (3 each). Prerequisite, Chemistry 143, 183.

The study of such topics as colloids, adsorption, and inorganic complexes, and their importance in analytical chemistry. (1941-1942 and alternate years). *Three hours a week, fall, winter, and spring quarters.* Professor Markham.

251. SEMINAR IN INORGANIC CHEMISTRY (3). Prerequisite, Chemistry 151, 152, 153.

Three hours a week, fall quarter. Professors Cameron, Edmister.

258-259. HISTORY OF CHEMISTRY (3 each). Prerequisite, Chemistry 31, 61, 62.

Historical background of chemistry. Biographical sketches of eminent scientists. Development of chemical laws and theories. *Three hours a week, winter and spring quarters.* Professor Edmister.

261, 262, 263. STUDIES IN THE CHEMISTRY OF PETROLEUM AND ORGANIC SULFUR COMPOUNDS (3 each). Prerequisite, Chemistry 166a, b, 167a, 168a.

(1940-1941 and alternate years.) *Three hours, or equivalent, a week, fall, winter, and spring quarters.* Professor Bost.

264, 265, 266. NATURAL PLANT PRODUCTS (3 each). Prerequisite, Chemistry 166a, 166b, 167a, 168a.

(1941-1942 and alternate years.) *Three hours, or equivalent, a week, fall, winter, and spring quarters.* Professor Russell.

267. ORGANIC CHEMISTRY (3 to 6). Prerequisite, to be determined by consultation with professor in charge.

A survey course. Special problems in organic chemistry. *Three to six hours a week, every quarter. Laboratory fee, to be determined by consultation with professor in charge.* Professors Bost, Russell, Williams.

281. ATOMIC AND MOLECULAR CHEMISTRY (3). Prerequisite, Chemistry 181, 182, 183.

The electronic structure of atoms and molecules; introduction to quantum theory and statistical mechanics; the periodic system; physical and chemical properties of the elements. *Three hours a week, fall quarter.* Professor Rice.

282, 283. CHEMICAL BINDING AND VALENCE (3 each). Prerequisite, Chemistry 281.

The nature and properties of the chemical bond, with applications to inorganic chemistry. (1940-1941 and alternate years.) *Three hours a week, winter and spring quarters.* Professor Rice.

284, 285. STATISTICAL PROBLEMS IN CHEMISTRY (3 each). Prerequisite, Chemistry 281.

The elements of statistical mechanics, with applications to the properties of gases (including chemical equilibria in gases), liquids and solids, chemical kinetics, and photochemistry. (1941-1942 and alternate years.) *Three hours a week, winter and spring quarters.* Professor Rice.

286. ADVANCED TOPICS IN PHYSICAL CHEMISTRY (3). Prerequisite, Chemistry 181, 182, 183.

Three hours a week, spring quarter. Professors Crockford, Rice.

287, 288, 289. HETEROGENEOUS EQUILIBRIA, PHASE RULE, FILM AND COLLOIDAL PHENOMENA (3 each).

Fall, winter, and spring quarters. Professor Cameron.

Research Courses

These courses are intended for applicants for advanced degrees. Laboratory work with frequent conferences with the professor and reference to the literature relating to the subject of research. The subject of research must be assigned or approved by the professor. A student may spend part or all of his time in research. *Laboratory fee, $10.00 a course.*

341. ANALYTICAL CHEMISTRY (5 or more).
Professors Dobbins, Markham.

351. INORGANIC CHEMISTRY (5 or more).
Professor Edmister.

361. ORGANIC CHEMISTRY (5 or more).
Professors Bost, Russell, Williams.

381. PHYSICAL CHEMISTRY (5 or more).
Professors Cameron, Crockford, Rice, Smith.

391. INDUSTRIAL CHEMISTRY (5 or more).
Professor Cameron.

DEPARTMENT OF CLASSICS

Gustave Adolphus Harrer, *James Penrose Harland, Shipp Gillespie Sanders, Professors.
Roselle Parker Johnson, Preston Herschel Epps, Associate Professors.

Graduate work in the Department of Classics is designed to meet the needs of three classes of students: (1) those who intend by intensive study and research to specialize in the classics; (2) those who are teachers or who are preparing to teach; (3) those who desire a knowledge of the classical civilizations for cultural purposes.

1. Intensive study and research are made possible through advanced lecture courses, seminars, a well-equipped library, and facilities for exchange of books with libraries of other large universities. Also for each language a fund is provided for the purchase of books for specialized advanced study. The central library is well equipped with standard editions; books of reference, such as Pauly-Wissowa, Daremberg-Saglio, Müller's *Handbuch, Corpus Inscriptionum Latinarum, Thesaurus Linguae Latinae, Oxyrhynchus Papyri* and numerous others; and complete sets of journals, including: *The Classical Journal, The Classical Weekly, Studies in Philology, Classical Philology, American Journal of Philology, American Journal of Archaeology, Journal of Hellenic Studies, Journal of Roman Studies, The Classical Review, The Year's Work in Classical Studies, Hermes, Glotta, Philologische Wochenschrift, Jahresbericht der Klassichen Altertumswissenshaft, Philologus, Rheinisches Museum, Revue de Philologie, Notizie degli Scavi, Speculum, L'année Epigraphique, Supplementum Epigraphicum, The Classical Quarterly.*

2. In view of the demand for well-trained teachers in secondary schools, courses are offered designed in content and method to meet this demand. Such prospective teachers should apply for the master's degree with Latin as their major subject.

3. The department aims also to cooperate with the other language departments in the University in making available for culture and comparative work in literature the great literatures of the world. To this end there are offered courses in Greek and Latin literature which do not require ability to read either language in the original. Such courses are designed to place emphasis on aspects of the Greek and Latin genius,

* Absent on leave, fall quarter, 1939-1940.

forms of literature created and perpetuated, and their permanent contribution to western civilization. Such courses may be elected as part of a major for the degree of Master of Arts in the Department of General and Comparative Literature and as a minor, or part of a major, in other departments.

Requirements for Advanced Degrees

At present an advanced degree may be taken in either Greek or Latin, or in both, with one language as the major and the other as the minor field of study; or the minor may be chosen from other related fields, such as ancient history, English, or a modern foreign language. Students whose major is in either of the two languages will probably be required to take certain courses in the history of the literature of Greece and Rome, and may be required, if the department thinks necessary, to take work in ancient history.

Requirements for advanced degrees are stated in general on pages 30-42 of this catalogue. Exact prescription of courses can be determined only upon a knowledge of the needs of the individual applicant, but candidates for the Ph.D. in Latin who have not studied Greek will be required to take some elementary work in the Greek language.

The Department regularly offers courses in the Summer Session.

The Department in the recent past has centered researches in the fields of Latin literature (particularly the poetry of the first century B. C. and the historical writings), of Roman political institutions and Roman epigraphy, and of classical art and archaeology.

GREEK

Courses for Graduates and Advanced Undergraduates

112. HOMER (5). Prerequisite, Greek 21-22-23 or equivalent.

Rapid reading of the Odyssey with Homeric Study. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Epps.

153. GREEK TRAGEDY (5). Prerequisite, Greek 21-22-23 or equivalent.

A reading of select Greek tragedies, with attention to the origin, structure, and history of Greek tragedy. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Epps.

154. GREEK COMEDY (5). Prerequisite, Greek 21-22-23 or equivalent.

Select comedies of Aristophanes and Meander will be read, with attention to the Greek comic form and characteristics and to the differences in the old and the new comedy. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Epps.

158. GREEK NEW TESTAMENT (5). Prerequisite, Greek 21-22-23 or equivalent.

The Acts of the Apostles, with selections from the Epistles, will be read. Attention is given also to textual criticism and to the sources and history of the Greek text. *Five hours a week, spring quarter.* Professor Epps.

171. GREEK HISTORIANS (5). Prerequisite, Greek 71.

Selections from Thucydides will be read and the history of Athens and Sparta will be reviewed with a view to explaining the underlying causes of the Peloponnesian War. *Five hours a week one quarter, on application.* Professor Harland.

Courses for Graduates

213. HELLENIC LITERATURE AND ITS HISTORICAL SETTING (5).

In a survey of the history of Hellenic Literature, selections from representative authors of each period will be read in the original. This reading will be supplemented by reports on important writers and works of each period. *Five hours a week, one quarter, on application.* Professor Harland.

301-302-303. GREEK SEMINAR (5 each).

This course is devoted to the study in detail of particular authors or periods in Greek literature, the subject matter varying from year to year. It calls for wide reading in the Greek authors selected and in the critical literature concerning them, with oral and written reports. Lectures and conferences. *Five hours a week, on application.* Professors Harland, Sanders, Epps.

(For additional courses see under Courses Requiring no Knowledge of the Greek or Latin Languages, pages 65-67, and under General and Comparative Literature. Attention is called also to courses in the curriculum in Comparative Linguistics.)

LATIN

Courses for Graduates and Advanced Undergraduates

101. ROMAN HISTORICAL LITERATURE (5). Prerequisite, Latin 21-22-23.

A study of the structure, purposes, and methods of the most significant works. Translation and reading in English from the literature, reports, lectures. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Harrer.

102. ROMAN DRAMATIC LITERATURE (5). Prerequisite, Latin 21-22-23.

A study of the development of Latin comedy and tragedy. Reading of selected plays. The course alternates with course 101. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Harrer.

103. PROSE WRITINGS OF THE REPUBLIC (5). Prerequisite, Latin 21-22-23.

An account of the development of prose literature from Cato tc Cicero, with special studies of certain types and readings from the chief works. *Five hours a week, winter quarter.* Professor Sanders.

104. CICERO: POLITICAL CAREER AND WORKS (5). Prerequisite, Latin 21-22-23.

A study of Cicero, as statesman and advocate. Selected letters, as well as a number of orations, will be read. *Five hours a week, spring quarter.* Professor Harrer.

105. THE SATIRES OF JUVENAL (5). Prerequisite, Latin 21-22-23.

Translation and interpretation, with study of the development of satire as a literary form among the Romans. *Five hours a week, fall quarter.* Professor Sanders.

110. MEDIEVAL LATIN (5). Prerequisite, Latin 21-22-23.

An introduction to Medieval Latin as a language and literature, with special attention to its relationship with the Classical. Assigned readings, papers, lectures on significant authors. *Five hours a week, winter quarter, on application.* Professor Johnson.

Courses for Graduates

202. LATIN EPIGRAPHY (5).

The aim of the course is to acquire facility in the deciphering and translating of inscriptions, and to study in detail a selection of significant inscriptions and their values in the field of Roman studies. *Five hours a week, fall quarter.* Professor Harrer.

203. LATIN PALEOGRAPHY (5).

The aim of the course is a study of the more important scripts, practice in decipherment and in the methods of textual criticism. *Five hours a week, one quarter, on application.* Professor Harrer.

301, 302, 303. LATIN SEMINAR (5 each).

The course in each quarter is devoted to the study in detail of a particular author or period in Roman literature, the choice of subject being determined, as far as possible, by the needs of the group. Typical subjects of recent years have been: Catullus, Cicero, Vergil, Horace, The Elegists, The Augustan Age, Suetonius, Tacitus, Post-Augustan Prose, Post-Augustan Poetry, etc. *Five hours a week, fall, winter, and spring quarters.* Professors Harrer, Johnson, Sanders.

310. THESIS COURSE (5).

This course is conducted by conferences as arranged with individual students. *Every quarter.* Professor Harrer.

(For additional courses see below under Courses Requiring no Knowledge of the Greek or the Latin Language and Courses in General and Comparative Literature. Attention is called also to courses in the Curriculum in Comparative Linguistics.)

Courses Requiring no Knowledge of the Greek or Latin Language

The following courses in classical literature and civilization are especially designed to supply the necessary foundation for those who, without a reading knowledge of the ancient languages, wish a broader culture, or plan to specialize in modern literature, history, art, etc. When properly approved, they will be allowed to count as part of the major requirement in other departments. They may be taken also to satisfy the requirements of a minor in literature. (See also under General and Comparative Literature.)

Courses for Graduates and Advanced Undergraduates

103. GREEK AND ROMAN EPIC (5).

Homer's Iliad and Odyssey, Vergil's Aeneid, and the minor Greek and Roman Epics. The ancient epic forms and characteristics will be studied. *Five hours a week, spring quarter.* Professors Epps, Harrer.

107. GREEK DRAMATIC LITERATURE (5).

Extensive reading of the Greek tragedies, with attention to the origin, development and content of Greek drama, and the Greek approach to life as presented in Greek tragedy. *Five hours a week, fall quarter.* Professor Epps.

193. HELLENIC ART (GREEK ART) (5). Prerequisite, Archaeology 92 or 93, or Greek 75, or Greek History.

The art of Hellas (Greece) will be studied as one phase of the civilization of the Hellenes. In a sense, the course will be an archaeological commentary on Hellenic history. *Five hours a week, one quarter, on application.* Professor Harland.

195. THE AEGEAN CIVILIZATION (of the Bronze Age) (5). Prerequisite, Archaeology 91, or Ancient History.

The civilization which developed in the Aegean Basin (Greece, Krete, and the Aegean Islands) will be studied and the relations with Troy, the Danube Valley, and in general the Ancient Near East. The connections between the civilization of the Aegean Bronze Age and the culture of Classical Greece will receive special attention. *Five hours a week, one quarter, on application.* Professor Harland.

Courses for Graduates

211. ARCHAEOLOGY: TOPOGRAPHY OF ATHENS, OLYMPIA, AND DELPHI (5). Prerequisite, ability to read Greek desirable.

A study of the material and artistic remains of these sites and of their historical, literary, and mythological associations. *Five hours a week, one quarter, on application.* Professor Harland.

291. ARCHAEOLOGY OF THE ANCIENT NEAR EAST (5). Prerequisite, Archaeology 91 or courses in Ancient History of the Near East.

The architecture, sculpture, and other arts of Egypt, Babylonia, Assyria, Persia, and of the Hittites will be studied. Special attention will be given to the contributions made to the modern world by the Egyptians, Sumerians, and other peoples of the Ancient Near East. *Five hours a week, one quarter, on application.* Professor Harland.

292. HELLENIC ARCHITECTURE (5). Prerequisite, Archaeology 91, 92, or 93, or Ancient History.

The beginnings of architecture in Hellas and its development will be studied with special emphasis on the Periklean buildings at Athens. *Five hours a week, one quarter, on application.* Professor Harland.

293. HELLENIC SCULPTURE (5). Prerequisite, Archaeology 92, 93, or 75, or Ancient History.

Sculpture will be studied as one phase of the civilization of the Hellenes and the interrelation of sculpture with the fields of architecture and painting in the Classical Period will receive special attention. *Five hours a week, one quarter, on application.* Professor Harland.

296. GREEK EPIGRAPHY (5). Prerequisite, reading knowledge of Greek.

The origin of the alphabet and the development of the various epichoric alphabets of the Hellenes will be studied. Selected inscriptions will be read. *Five hours a week, one quarter, on application.* Professor Harland.

298. ROMAN ARCHAEOLOGY. Prerequisite, Archaeology 91, 92, 93.

The arts of the Romans will be studied, after a survey of the history of the Etruscans and of their art. The contributions of the Etruscans and the Hellenes (Greeks) to the Romans will be investigated and then the architecture, sculpture, and painting of the Romans will be studied. *Five hours a week, spring quarter.* Professor Harland.

GRADUATE COURSES IN GREEK AND LATIN AT DUKE UNIVERSITY

By a cooperative arrangement graduate students at the University of North Carolina may take the following courses given at Duke University. For program and transfer of credit, consult the Dean of the Graduate School and the appropriate department head.

Greek

Aeschylus, Sophocles, Euripides. Professor Peppler.
Homer: *Odyssey,* Pindar, Bacchylides. Dr. Truesdale.
Herodtus, Thucydides. Professor Peppler.
Antiphon, Lysias, Isocrates, Demosthenes. Professor Way.
Plato. Professor Way.
Aristophanes. Professor Peppler.
Topography of Athens. Professor Way.
Greek Epigraphy. Professor Way.
Greek Dialects. Professor Way.
Greek Historical Inscriptions. Professor Way.
Greek Archaeology. Professor Way.
Greek Seminars in Aristophanes, Thucydides, Attic Orators, Greek Tragic Poets. Professor Peppler. Seminar for 1940-1941: The Greek Tragic Poets.
The Text of the New Testament. Dr. Clark.

Latin

Roman Epic Poetry. Professor Gates.
Drama: Plautus, Terence, Seneca. Professor Gates.

Philosophy: Lucretius, Cicero, Seneca. Professor Rosborough.
Vulgar Latin. Professor Rosborough.
Introduction to Roman Art and Archaeology. Professor Rosborough.
Topography and Monuments of Ancient Rome. Professor Rosborough.
Roman Oratory. Professor Rogers.
Roman Historical Literature. Professor Rogers.
Roman Life. Professor Rosborough.
Latin Epigraphy. Professor Rosborough.
Greek and Latin Linguistics. Professors Rosborough and Rose.
Latin Seminars in Catullus, Roman Historians, Martial, Cicero's Public Life, The Reign of Tiberius, Roman Provincial Adminstration. Professors Rosborough and Rogers. Seminar for 1940-1941: Cicero's Public Life. Professor Rogers.

CURRICULUM IN COMPARATIVE LINGUISTICS

ADMINISTRATIVE COMMITTEE: THE DEAN (Chairman), Professors LANE (Secretary), BOGGS, ERICSON, HARRER, HOLMES.

This curriculum intends to organize the facilities for the study of comparative linguistics which are already offered by the various departments of the University in the form of historical and comparative grammar courses; and, in addition, it fills certain gaps which would otherwise obviously present themselves to a graduate student who might desire to devote himself seriously to any particular branch of Indo-European linguistics.

Students with an undergraduate major in any department of language and literature are eligible to take work in this curriculum with a view to becoming candidates for higher degrees. A reading knowledge of French and German and one Classical language is required for candidates for higher degrees in comparative linguistics.

Candidates offering this field as either major or minor subject for their degrees are required to show an adequate understanding of the history and development of the English language, to be secured by formal instruction or to be tested by the submission of acceptable evidence of such mastery. Furthermore, from both a cultural and a practical viewpoint, it is advisable that a student should not detach his linguistic studies too completely from those in literature.*

* The following programs are announced:

	Courses
For A.M. Major:	
Introduction to the Historical Study of Languages	1
Sanskrit or Comparative Greek and Latin Grammar	2
One course in Germanic Linguistics (e.g. Gothic, Old English, or Old High German)	1
One course in Romance Linguistics (e.g. Old French, Old Spanish, or Old Italian)	1
An additional course in Linguistics to be determined by the advisory committee	1
Total:	6
For A.M. Minor:	
Introduction to the Historical Study of Language	1
Sanskrit or Comparative Greek and Latin Grammar	2
Total:	3
For Ph.D. Major:	
Introduction to the Historical Study of Language	1
Sanskrit	3
Comparative Greek and Latin Grammar	2
Lithuanian and Church Slavic	2
Old Irish	1
Three courses in Germanic Linguistics (namely, Old English, History of the English Language, Gothic)	3
Three courses in Romance Linguistics	3
Seminar	1
Total:	16

In addition a minor of six courses in some field of literature and such additional courses in the major as the advisory committee may require.

A minor is permitted under the same rules of eligibility governing the major.

The curriculum draws upon the library facilities, as well as the faculties, of the departments in language of the University. These include the essential handbooks, monographs, and linguistic periodicals of the special fields. In addition, through recent appropriations for linguistics, fundamental works in Sanskrit, Slavic, and the more general aspects of Indo-European comparative grammar have been acquired.

General

101. INTRODUCTION TO THE HISTORICAL STUDY OF LANGUAGE (5). Prerequisite, a reading knowledge of one classical language and French or German.

The course will include practical phonetics, phonetic change, morphologic change, the comparative method, and a survey of language families with special emphasis on Indo-European. *Five hours a week, fall quarter.* Professor Lane.

103. THE INDO-EUROPEANS (5). Prerequisite, reading knowledge of one classical and one modern foreign language.

An introduction to the comparative grammar of the Indo-European languages, to the pre-history of the Indo-European people, their culture, spread, and origins. *Five hours a week, spring quarter.* Professor Lane.

105. CELTIC. OLD IRISH (5).

Grammar and reading of texts. Pokorney's *Old Irish Reader, Táin Bó Cūailnge* (Supplement to *Eriu*). *Five hours a week, on demand.* Professor Holmes.

106. CELTIC. WELSH. *Five hours a week, winter quarter.* Professor Holmes.

111, 112, 113. SANSKRIT (15).

Elements of the grammar of Classical Sanskrit, with reading of prose and selected poetic texts. The course is intended to fit the needs of students interested primarily in either Indic philology or Indo-European linguistics. *Five hours a week, through the year.* Professor Lane.

204 COMPARATIVE GRAMMAR OF GREEK AND LATIN (5).

The course is designed not only to meet the requirements of the student of the Classics but also to furnish the student of other branches of Indo-European with the fundamental notions of the parent speech which can only be derived from the study of historical Greek grammar. *Five hours a week, winter quarter, on demand.* Professor Lane.

206. LITHUANIAN (5).

Elementary Lithuanian grammar and readings with introduction to Balto-Slavic linguistics and with reference to other branches of Indo-European. *Five hours a week, winter quarter, on demand.* Professor Lane.

207. CHURCH SLAVIC (5).

Elements of the grammar of Old Church Slavic and readings from the gospels with an introduction to comparative Slavic grammar. Designed as a continuation of 206. *Five hours a week, spring quarter, on demand.* Professor Lane.

361, 362, 363. SEMINAR IN LINGUISTICS (5 each).

The subject matter will be determined by the needs of the students. *Five hours a week, through the year.* Members of the Staff.

English Linguistics

101. OLD ENGLISH GRAMMAR AND READINGS (5).

Selections for translation from Early and Late West Saxon prose and from Old English poetry. Drill in the principles of English philology. Old English in relation to the other Germanic languages. *Five hours a week, fall quarter.* Professor Ericson.

201. STUDIES IN OLD ENGLISH LITERATURE: BEOWULF (5). Prerequisite, English 101.

Five hours a week, winter quarter. Professor Ericson.

202. MIDDLE ENGLISH (5).

The main purpose of the course is to acquaint the student with the literature of the period through relation to the social, political, and religious background. A fuller study will be made of the historical and philological relations of Middle English than in English 208. *Five hours a week, spring quarter.* Professor Coffman.

204. HISTORY OF THE ENGLISH LANGUAGE (5). Prerequisite, English 101, 202.

An intensive and detailed study of the language according to historical methods. General Indo-European phenomena as applied to English. For students of linguistics and others wishing a thorough background for literary studies in the English classics. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Ericson.

Germanic Linguistics

161. HISTORY OF THE GERMAN LANGUAGE (5). Prerequisite, a good reading knowledge of German.

Five hours a week, fall quarter. Professor Lane.

221. GOTHIC (5).

Five hours a week, fall quarter. Professor Lane.

222. OLD HIGH GERMAN (5).

Five hours a week, winter quarter. Professor Lane.

223. COMPARATIVE GERMANIC GRAMMAR (5).

Five hours a week, spring quarter. Professor Lane.

232. OLD SAXON (5).

Five hours a week, winter quarter, on demand. Professor Lane.

233. OLD NORSE (5).

Five hours a week, spring quarter, on demand. Professor Lane.

235-236. MIDDLE HIGH GERMAN (10).

Rapid reading of Middle German lyrics and epics. *Five hours a week, winter and spring quarters.* Professor Jente.

Romance Linguistics

126. HISTORY OF THE FRENCH LANGUAGE (5). Prerequisite, French 72.

A general survey from the origins to the present day, with especial emphasis upon the period, 1500-1900; the influence of the Erudits, Précieuses, Philosophes, and Romanticists; spelling reforms. *Five hours a week, winter quarter.* Professor Holmes.

221-222-223. OLD FRENCH (5 each).

Reading the oldest texts: *Le chanson de Roland; Aucassin et Nicolette; Chrétien de Troyes.* Lectures on French phonology and morphology. *Five hours a week, fall, winter, and spring quarters.* Professor Holmes.

225. PROVENCAL (5).

A study of the ancient language and literature of Provence. The poetry of the Troubadours. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Holmes.

221. OLD ITALIAN (5).

Readings of the poets previous to Dante. Early monuments. Survey of phonology and morphology. *Five hours a week, fall quarter.* Professor Holmes.

221-222. OLD SPANISH (5 each).

Ford's Old Spanish Readings. The Poem of the Cid and other Old Spanish texts. Lectures on phonology, morphology, and syntax. *Five hours a week, fall and winter quarters.* Professor Boggs.

DEPARTMENT OF DRAMATIC ART

Frederick Henry Koch, Paul Elliott Green, George Raleigh Coffman, Professors.
Robert Boies Sharpe, Samuel Selden, Associate Professors.

The Department of Dramatic Art offers to graduate students work in the following fields: (1) playwriting and experimental production; (2) training in play directing and staging methods; (3) research in the field of modern drama, theatre arts, and theatre history.

Intensive study and research in all phases of dramatic art are made effective through advanced lecture courses, the seminar, and supervised practice work in theatre technique. The library resources for the student of dramatic literature and theatre history include a large and constantly increasing collection of critical and technical works, and plays of all periods. Of special interest to students of the American drama are the Archibald Henderson Collection of nearly two thousand volumes and the recently acquired Roland Holt Theatre Collection of books, playbills, scrapbooks, photographs, and press reviews—a chronicle of the New York stage from 1881 to 1931. A Dramatic Museum provides for The Carolina Playmakers' and the Holt Collections, and other interesting theatre objects.

Practical training for the student of playwriting, acting, directing, and technical work is provided by the production unit of the Department of Dramatic Art, The Carolina Playmakers. The Playmakers Theatre building and Scene Shop furnish ample opportunity for the student to test theory with practice, in both experimental and public performance.

The Forest Theatre provides an idyllic environment for outdoor classic and romantic drama. The University radio studio and The Carolina Playmakers of the Air provide experience in radio writing and production over local and national broadcasting networks, and lectures and demonstrations in the art of the cinema are available for students interested in this field.

Publications

A quarterly journal, *The Carolina Play-Book,* now in its thirteenth volume, serves as a record of the growth of native folk drama. Eight volumes of folk drama by playwriting students of the Director of the Department have been published: *Carolina Folk Plays, First, Second,* and *Third Series; Carolina Folk Comedies; The Lord's Will and Other Carolina Plays* by

Paul Green; *Mexican Folk Plays* by Josephina Niggli; *Folk Plays of Eastern Carolina* by Bernice Kelly Harris; and *American Folk Plays* by playwrights from seventeen states, Canada and Mexico.

Requirements for Advanced Degrees

Candidates for the degree of Master of Arts in the Department of Dramatic Art must have completed, before admission to candidacy, the undergraduate major in Dramatic Art at the University of North Carolina, or its equivalent.* The candidate must take nine courses, six of which will be considered the major and three the minor. The six courses in the major must be taken in the Department of Dramatic Art in accordance with the following plan: two courses in playwriting (to be selected from the following: 155, 156, 157, 203); or one course in Playwriting and one in Staging Methods (202); one course in Play Direction, Advanced (201); one course in dramatic literature (to be selected from the following: 149, 160, 161, 162); one Seminar in Dramatic Art (325); and a thesis. The student may satisfy the requirement of a thesis in either of the following ways: (1) writing an original full-length play; (2) writing a thesis in the field of modern drama, theatre history, or theatre arts.**

Courses for Graduates and Advanced Undergraduates

149. AMERICAN DRAMA (5).
A brief survey of the nineteenth century English and American Drama and a study of the development of American drama in the twentieth century through representative plays. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Koch, Mr. Wynn.

The following three courses in Playwriting (155, 156, 157) should be taken consecutively. If it is not practicable to do this the student may, with the consent of the instructor, take any one of the three courses offered. Under exceptional circumstances a student may repeat one or more of the courses for credit. Special permission is necessary for this privilege.

155. PLAYWRITING (5).
A practical course in playwriting and experimental production. In the playwriting courses emphasis is placed on the native tradi-

* Requirements for an Undergraduate with a Major in Dramatic Art.
A minimum of eighteen courses distributed as follows:
Three or four courses in Playwriting: (155, 156, 157) and Theatre Arts: (61, 62, 63, 64, 65, 66). (One course in Playwriting required.)
Two courses in Dramatic Literature: American Drama (149). History of the Theatre (160). Comparative Drama (161), Modern Drama (162).
One course in Shakespeare (50).
One course in Voice Training for Stage and Radio (55).
Four to eight courses in allied departments of the Division of the Humanities to be taken after conference with the Head of Department.
Four to seven courses from other divisions.

** Electives for the Graduate Minor, to be chosen from one or the other group of the following:
I. From the Department of English: 113, 114. 133, 148, 167, 203, 231-232.
II. From the Department of Comparative Literature: 107, 135, 155, 177, 185, 204.

tion and present-day life of the region with which the student is most familiar. The student is expected to direct experimental productions of plays written in the course. The best of these are given public production by The Carolina Playmakers. *Four hours lecture and two hours practical work a week, fall quarter. Fee for experimental production, $3.00.* Professors Koch, Selden; Professor Green, lecturer and consultant.

156. PLAYWRITING (5).

The principles of dramatic construction and practice in the writing and production of one-act plays. Experimental and public productions. *Four hours lecture and two hours practical work a week, winter quarter. Fee for experimental production, $3.00.* Professors Koch, Selden; Professor Green, lecturer and consultant.

157. PLAYWRITING (5).

Practice in writing one-act and full-length plays. Experimental and public productions by The Carolina Playmakers. *Four hours lecture and two hours practical work a week, spring quarter. Fee for experimental production, $3.00.* Professors Koch, Selden; Professor Green, lecturer and consultant.

160. HISTORY OF THE THEATRE (5).

A course designed to give the student a view of the institution of the theatre in its beginnings and development. The emphasis is on those features of the theatre which are not dealt with in the more literary courses—the changing forms of the theatre building, scenery, lighting, the audience, the actor, the relation of the theatre to social conditions, and the place of the theatre in the history of civilization. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Koch; Mr. Wynn.

161. COMPARATIVE DRAMA (5).

A general survey of the drama and the theatre from Aeschylus to Ibsen. The development of dramatic literature is studied through representative plays (in translation) of the leading European dramatists. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Koch; Mr. Wynn.

162. MODERN DRAMA (5).

A study of representative plays of the modern period, beginning with Ibsen. Special attention is given to the function of the drama in interpreting modern thought and changing social conditions. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Koch; Mr. Wynn.

Courses for Graduates

201. PLAY DIRECTING, ADVANCED (5). Prerequisite, Dramatic Art 61 or 62, or equivalent training in acting or directing.

Theory and practice in the training of actors and the preparation of plays for experimental and public performance. *Five hours a week, spring quarter. Fee for materials, $3.00.* Professor Selden.

202. STAGING METHODS (5). Prerequisite, Dramatic Art 64, or equivalent training in technical practice, and a course in drawing and painting.

Individual instruction in the designing and planning of stage scenery and lighting, and in theatre engineering. *Five hours a week, winter quarter. Fee for materials, $3.00.* Professor Selden.

203. TECHNICAL PROBLEMS IN PLAYWRITING (5). Prerequisite, Dramatic Art 155 or 156 or 157.

An advanced course in the principles of writing the full-length play. A study of the organization of materials, the development of the scenario, and the preparation of the completed script. *Five hours a week, winter quarter.* Professors Koch, Green.

204. PHILOSOPHICAL IDEAS IN DRAMATIC LITERATURE (5). Prerequisite, adequate background in Dramatic Literature.

A study of dramatic literature as interpreted from the point of view of the social, political, and philosophical theories of the time. Beginning with the Greeks. *Five hours a week, winter quarter.* Professor Green.

325. SEMINAR IN DRAMATIC ART (5).

Research in dramatic literature, theatrical history, and staging methods. Required of all candidates for the A.M. degree. *Five hours a week, fall quarter.* Professors Koch, Sharpe, Selden.

DEPARTMENT OF ECONOMICS AND COMMERCE

Dudley deWitt Carroll, Erle Ewart Peacock, *Erich Walter Zimmerman, John Brooks Woosley, Corydon Perry Spruill, Gustav Theodor Schwenning, **Clarence Heer, Richard J. M. Hobbs, Harry deMerle Wolf, Daniel Houston Buchanan, †Edward Morris Bernstein, Malcolm Dean Taylor, Milton Sidney Heath, Professors.

Wylie Kirkpatrick, Acting Professor.

Joseph Merritt Lear, Robert Howard Sherrill, Dudley Johnstone Cowden, Rex Shelton Winslow, Associate Professors.

Allen Thomas Bonnell, Assistant Professor.

Franz Gutmann, Ervin Hexner, Adolf Bertram Drucker, Lecturers.

The Department of Economics and Commerce offers three advanced degrees: the Master of Science in Commerce; the Master of Arts in Economics; and the Doctor of Philosophy in Economics. The Master of Science in Commerce is designed for prospective teachers of business subjects and for those students who desire graduate training for more specialized and advanced positions in trade and industry. Candidates for this degree may have a major in accounting, finance, personnel, and industrial management, insurance, foreign trade, or marketing. The minor of three courses must be taken in economics or in some closely related discipline.

Graduate study in economics, viewed pragmatically, is provided to meet the needs of those who wish to engage in college and university teaching or to pursue research work for governmental or private agencies. It also offers to those not primarily interested in the field as a profession an opportunity to pursue more critically and comprehensively their investigation of the economic forces and processes which so vitally condition individual and social behavior.

Students seeking advanced degrees in economics may have their major in one of the following fields: economic theory and history, labor and industrial management, finance, foreign trade, marketing, and transportation, and economic statistics and accounting. The minor may be taken within the department or in an allied department. Candidates for either the Master's or the Doctor's degrees are required to have a working familiarity with statistical and accounting methods and

* Absent on leave, fall and winter quarters, 1939-1940.
** Absent on leave, 1939-1940.
† Absent on leave on the Kenan Foundation, spring quarter, 1939-1940.

techniques comparable to the content of Economics 170 and Commerce 71, respectively. In addition, candidates for the degree of Doctor of Philosophy are required to take Economics 251-252-253, or its equivalent. The other course requirements depend upon the fields of special interest, but a coherent and logical program must be followed.

Necessarily, the courses in economics and commerce are interdependent and closely affiliated. Differentiation may hardly be said to rest on principles and practices, since both theory and practice form the content of commerce and economics courses. The distinction lies rather in approach and emphasis. The two divisions of the department are supplementary, and graduate students are advised to select their courses in such a manner as to obtain a functionally unified program of study, irrespective of catalog designations. Doctoral candidates will be urged, and in specific instances required, to supplement their work in economics with courses in the other social sciences.

The facilities for graduate study are reasonably ample. For some years the department has devoted itself painstakingly to the accumulation of library materials commensurate with the requirements of advanced study. As a result, a special library collection of 30,000 volumes and 275 trade journals, scholarly publications, and statistical services supplement the general library facilities. The collection is especially strong in the fields of labor, money and banking, public finance, economic theory, marketing, management, and foreign trade. Attention should also be called to the unique library facilities of other departments, especially in Southern history, state statutes, and documents which will be of value to graduate students in economics. A separate reading room in charge of a specialist in this field of library administration is maintained for students in the department. Individual carrells are available to graduate students in the main stack room of the library.

The department is housed in Bingham Hall, which was designed especially for its needs. Laboratory equipment and space are quite adequate for research activities.

In collaboration with the Southern Economic Association the University of North Carolina publishes *The Southern Economic Journal,* a quarterly publication primarily designed to promote research in Southern economic problems as well as to provide a medium for the creative work of Southern economists. Acceptable material from graduate students will be welcomed.

The department has two teaching fellowships and a limited number of assistantships which are available to graduate students.

ECONOMICS

Courses for Graduates and Advanced Undergraduates

121. RISK AND RISK-BEARING (5). Prerequisite, Economics 21-22-23 or equivalent.

A study of the risk element in modern industry together with the measures which have been devised to meet it. This course should precede the study of insurance. *Five hours a week, fall quarter.* Professor Lear.

124. PRINCIPLES OF MARKETING (5). Prerequisite, Economics 21-22-23 or equivalent.

A critical study of marketing organization and operation. Among the topics discussed are: methods of approach to the study of marketing; the marketing of farm products; the marketing functions; trade channels; direct marketing; the services performed by brokers, sales agents, auctions, wholesalers, and different types of retailers; commodity exchanges and future trading; price policies; price maintenance; brand policies; market research; problems relating to marketing costs; and scientific marketing management. Emphasis is placed on recent developments in retailing such as the growth in economic importance of centrally owned chain store organizations and cooperative chains. In the study of the marketing of farm products special attention is given to cooperative marketing, and the work of the Federal Farm Board and the Farm Credit Administration is examined critically. Study is made likewise of other governmental bureaus which influence marketing. *Five hours a week, fall quarter.* Professor Taylor.

131. ECONOMIC THEORY (5). Prerequisite, Economics 21-22-23 or equivalent.

The primary purpose of this course is the development of greater facility upon the part of the student in the use of economic theory as a tool in the solution of economic and business problems. Supplementary thereto, the assumptions and limitations of economic theory are analyzed. Specific problems are employed to test the utility of theory as a framework of thought for their solution. *Five hours a week, every quarter.* Professor Spruill.

135. ECONOMIC HISTORY (5). Prerequisite, Economics 31-32.

A study of the development of the modern economic system, especially in Europe and America. Emphasis is placed upon the growth of the leading economic institutions, such as the factory system, or the banking system, together with the interrelations among these institutions and between them and the general political and cultural movements. *Five hours a week, every quarter.* Professor Buchanan.

137. ECONOMIC DEVELOPMENTS IN THE ORIENT SINCE 1800 (5).

A study of the foundations of economic life and modern economic developments in Japan, China, and India. Special attention is given

to the rise of modern industry, commerce, and finance, and to the effect of these upon the indigenous cultures. *Five hours a week, spring quarter.* Professor Buchanan.

141. PUBLIC FINANCE (5). Prerequisite, Economics 21-22-23 or equivalent.

A general study of government business covering the principles involved in public revenues and expenditures—local, state, and national; a treatment of the just distribution of public charges and their incidence; and a study of the growth and organization of modern tax systems. *Five hours a week, fall quarter.* Professors Heer, Kilpatrick.

142. PROBLEMS IN FEDERAL FINANCE (5). Prerequisite, Economics 141.

An advanced critical study of the problems of American national finance with particular reference to federal taxes and federal tax procedure. *Five hours a week, winter quarter.* Professors Heer, Kilpatrick.

143. PROBLEMS IN STATE AND LOCAL FINANCE (5). Prerequisite, Economics 141.

Selected problems relating to the financing of state and local functions. *Five hours a week, spring quarter.* Professors Heer, Kilpatrick.

145. THEORIES AND FORMS OF BUSINESS ENTERPRISE (5). Prerequisite, Economics 21-22-23 or equivalent.

This course deals primarily with the combination movement. But it will treat this problem in its widest aspects: the historical background and the evolution of modern business forms, the theory of business enterprise, the structures and functions of organization, the relation of these questions to social welfare. Pools, trade associations, mergers, trusts, bankers' control, price control are some of the principal questions which will be considered. *Five hours a week, spring quarter.* Professor Hexner.

151. TRANSPORTATION (5). Prerequisite, Economics 21-22-23 or equivalent.

A general study from the historical and critical points of view of railway transportation in such representative countries as Great Britain, France, Italy, Germany, and the United States; with some consideration of passenger and freight traffic and rates and the State's relation to railways. *Five hours a week, fall quarter.* Professor Heath.

153. PUBLIC UTILITIES (5). Prerequisite, Economics 21-22-23 or equivalent.

The first part of the course is historical and descriptive, covering the physical and technical development and the corporate and financial set-up of public service corporations other than railroads, including electric light and power companies, telegraph companies, street railways, motor vehicle carriers, and similar utilities. The second part of the course deals with methods of protecting the public interest in utility services. Among the topics considered are: The legal bases of utility regulation, state and federal regulatory agencies, valuation and rate return, principles of rate making, capital-

ization and security regulation, the problem of the holding company, and public ownership. *Five hours a week, spring quarter.* Professor Heer.

161. THEORY OF INTERNATIONAL TRADE (5). Prerequisite, Economics 21-22-23 or equivalent.

In this course international trade is viewed from the standpoint of the political economist, emphasizing the social aspect. After a historical study of the past and a critical analysis of the present foreign commerce of the United States and principal competitors, an effort is made to apply to a survey of our foreign markets and of our foreign sources of supply the general principles of economic theory in so far as they pertain to international trade. Following this the payment balances of this country and of other leading countries engaged in world commerce are critically studied. Finally, the most important theories of international trade are reviewed in the light of historical development. *Five hours a week, fall quarter.* Professor Zimmermann.

165. COMMERCIAL POLICY OF MODERN NATIONS (5). Prerequisite, Economics 161.

After a general survey of international commercial policy up to the close of the Napoleonic Wars, a more detailed comparative study of the commercial policy of the leading nations during the last hundred years is made. The following countries are included: United States, Great Britain, France, Germany, Russia, Italy. Canada, Argentina, and India. Special attention is given to tariff problems, to colonial policies, and to imperialism. The present world resources situation and its probable effect on future commercial policy is appraised. *Five hours a week, winter quarter.* Professor Drucker.

170. ECONOMIC STATISTICS (6). Prerequisite, Mathematics 1-2-3, Economics 21-22-23 or equivalent.

This course is designed to give a critical understanding of the more important processes of statistical technique used by economists and business men, and found in current discussions of economic matters. Among the topics included are graphic presentation, averages, index numbers, the cyclical analysis of time series, and simple correlation. The emphasis in the study is put on the meaning, significance, and limitations of statistical methods in economics, rather than on techniques of computation and mathematical proofs of the methods. The laboratory work is designed to give practice in the use of the processes studied, together with an interpretation of the results found. *Four lecture and four laboratory hours a week, every quarter. Laboratory fee, $3.00.* Professor Cowden.

171. ADVANCED ECONOMIC STATISTICS I (5). Prerequisite, Economics 170 or its equivalent.

This course is designed to give the student the ability to use some of the more exact and more technical tools of statistical method than can be considered in the elementary course, such as curvilinear trends for time series, changing seasonal variation, and multiple correlation. Acquaintance with practical work and the current literature in statistics is sought through required reading and class reports on recent statistical studies. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $2.00.* Professor Cowden.

172. ADVANCED ECONOMIC STATISTICS II (5). Prerequisite, Economics 21-22-23, Economics 170 and 171, or equivalent.

The object of this course is threefold: (1) to give training in advanced or specialized techniques; (2) to study the application of statistical techniques to economic analysis; (3) to supply the special statistical needs of individual students. Techniques studied include the fitting of skewed frequency distributions, the fitting of growth curve to time series, curvilinear multiple correlation, both mathematical and graphical, analysis of variance, and an introduction to factor analysis. Economic subjects quantitatively considered include demand curves, diminishing returns, price change, and business cycles. *Four lecture hours and outside assignments a week, spring quarter. Laboratory fee, $2.00.* Professor Cowden.

185. BUSINESS CYCLES (5). Prerequisite, Economics 21-22-23 or equivalent and 81.

A study of the alternating periods of depression and prosperity. The underlying causes of panics and crises. Fluctuations in prices, trade volume, and physical production. *Five hours a week, winter or spring quarter.* Professors Bernstein, Gutmann.

191. AN INTRODUCTION TO THE LABOR PROBLEM (5). Prerequisite, Economics 21-22-23 or equivalent.

To the extent that the competitive wage system fails (a) to provide for the laborer an adequate basis for a decent living and (b) to draw from him the services he ought to render to industry, there appears to be a "labor problem." The purpose of this course is to make an analytic survey of the modern labor problem in its major aspects, such as unemployment, low wages, industrial accidents and diseases, overstrain and superannuation, and the status of the worker in industrial society. Trade unionism and the labor movement and intervention by the State in behalf of the worker and social methods of coping with the problems of labor are also surveyed. *Five hours a week, every quarter.* Professor Wolf.

192. LABOR AND SOCIAL CONTROL (5). Prerequisite, Economics 191.

An advanced course in social methods of coping with labor problems. These fall roughly into three classes: (a) self-help on the part of the workers, which embraces trade unionism, labor political activity, and consumers' cooperation; (b) employers' policies, such as welfare work and paternalism, profit-sharing, and company unionism; and (c) intervention by public authority, as through labor legislation, conciliation and arbitration, and judicial limitation of private property rights. In so far as possible the various topics will be studied in terms of the Southern labor situation. *Five hours a week, winter quarter.* Professor Wolf.

195. THEORIES OF ECONOMIC REFORM (5). Prerequisite, Economics 21-22-23 or equivalent.

A critical analysis of the leading proposals for reform in the present economic system, including Socialism, Bolshevism, Single Tax, and Social Insurance. *Five hours a week, every quarter.* Professor Carroll.

197. GOVERNMENT AND BUSINESS (5). Prerequisite, Economics 21-22-23 or equivalent.

This course deals with the control exercised by government over business operations. Emphasis is placed upon control as exercised by the legislative and judicial branches of government. Attention is given to the constitutional protection enjoyed by business organizations. The power of government to regulate business under the commerce power, the police power and taxing power and the due process of law clause of the Constitution are treated. The course includes a study of the anti-trust laws and their interpretation by the courts, also unfair trade practices, regulation of public utilities, highway and airway control as well as the control of securities and security exchanges and the relationship of government to labor. Government participation in business is treated to a limited extent. *Five hours a week, spring quarter.* Professor Hobbs.

Courses for Graduates

211. ADVANCED COMMODITY ECONOMICS (5). Prerequisite, Economics 41, 21-22-23, or equivalent.

The demand and supply conditions of selected commodities representing certain types are studied. The institutional factors affecting these conditions are critically examined with special reference to price behavior. *Five hours a week, winter quarter.* Professor Zimmermann.

224. THE ECONOMICS OF MARKETING (5). Prerequisite, Economics 124 or equivalent.

This course will develop the economic principles underlying marketing and show the interrelations of the various marketing activities. Selected topics, such as the following, will be discussed critically: the government and marketing, the economics of chain store distribution, agricultural cooperation, the retailer and consumer cooperative movements, marketing research studies, scientific marketing management, resale price maintenance, the costs of distribution and waste and inefficiency in marketing. The topics considered will vary from year to year depending on the interests of the class. *Five hours a week, spring quarter.* Professor Taylor.

235. ECONOMIC DEVELOPMENTS IN THE OCCIDENT BEFORE 1750 (5).

A study of the economic aspects of European life with special emphasis upon the manorial system and its decline, the guild system, the "putting out" system, the growth of money and credit economy, and the Commercial Revolution. (Alternates with Economics 236; will be given in 1940-1941.) *Five hours a week, fall quarter.* Professor Buchanan.

236. ECONOMIC DEVELOPMENTS IN THE OCCIDENT SINCE 1750 (5).

A study of the growth of modern economy in the Western world. Special emphasis is placed upon the rise and spread of the factory system and the changes which have accompanied it in agriculture, transportation, money and banking, trade, and the condition of the labor class. (Alternates with Economics 235, will be given in 1941-1942.) *Five hours a week, fall quarter.* Professor Buchanan.

241. HISTORY OF FISCAL DOCTRINES (5). Prerequisite, Economics 141.

Theories of distributive justice in taxation; the incidence and economic effects of taxation; and the use of taxation as an instrument of social control. A review of the ideas of representative writers from the eighteenth century to the present time. *Five hours a week, spring quarter.* Professor Heer.

244. INDUSTRIAL COMBINATIONS (5). Prerequisite, graduate standing.

An analysis of the several types of horizontal and vertical industrial combinations with special attention to their production and pricing policies and their economic significance. The legal position of combinations in Europe and America will be examined, and public policy with respect to them will be appraised. International combinations as politico-economic institutions will be critically examined. *Five hours a week, winter quarter.* Professor Hexner.

251-252-253. ADVANCED ECONOMIC THEORY (15). Prerequisite, Economics 21-22-23 or equivalent.

A survey of economic theory from the standpoint of the evolution of modern industrial society. The three courses will not only include a review of the works of the leading economic writers, but will also summarize the principal physical, psychic, and social factors which have shaped economic theory and economic institutions. *Five hours a week, fall, winter, and spring quarters.* Professor Heath.

281. MONEY, PRICES, AND FOREIGN EXCHANGE (5). Prerequisite, Economics 81 or equivalent.

A critical consideration of the various monetary standards, the theories of the value of money, the interrelationships of exchange rates and prices, recent monetary policies, and proposals for monetary reform. Emphasis is given to monetary history and contemporary experience in considering the validity of monetary theory. *Five hours a week, fall quarter.* Professors Bernstein, Gutmann.

282. COMMERCIAL AND CENTRAL BANKING (5). Prerequisite, Economics 81 or equivalent.

A study of the structure, functions, and operations of commercial and central banks with special reference to the Federal Reserve System. The policies of central banks as they relate to the volume of physical production, the national income, and the price level are critically examined. *Five hours a week, winter quarter.* Professor Woosley.

291. LABOR ECONOMICS (5). Prerequisite, Economics 191 or equivalent.

An intensive and critical analysis of certain phases of labor problems, among them: current wage theory; the position of the laborer in modern society; wage differentials; the effects of machinery on wages, hours, and work opportunities; the problem of unemployment; the economics of collective bargaining. *Five hours a week, spring quarter.* Professor Wolf.

295. CASE STUDIES IN ECONOMIC REFORM (5). Prerequisite, Economics 31-32, 195 or its equivalent.

This course is devoted to a critical study of selected programs of Economic Reform currently in operation in various parts of the world, e.g., Fascism, Consumer Cooperation, The New Deal, the Soviet System, the Swedish System. Assignments will be made in harmony with the interests of the individual members of the class. *Five hours a week, winter and summer quarters.* Professor Carroll.

301abc. SEMINAR IN ECONOMICS (with thesis 5). Prerequisite, Economics 21-22-23 or equivalent, and 81-82.

A general introduction to methods of advanced study. Some phase of economic activity in harmony with the interests of the members of the seminar is selected for consideration. Methods of work and content receive equal emphasis. *Fall, winter, and spring quarters.* Professor Heath (Chairman).

324. SEMINAR IN MARKETING (5 each quarter).

This course is available for graduate students who wish to make an intensive study of special topics in marketing or to do original research work. Individual conferences are arranged with the instructor. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Taylor.

341. RESEARCH COURSE IN PUBLIC FINANCE (5 each quarter).

The changing form and distribution of wealth and income together with the expanding conceptions of governmental services make imperative a constant re-examination of fiscal problems. The scope of operations and the magnitude of revenues and expenditures emphasize the importance of administrative efficiency. Critical studies in this field are carried on under the supervision of the professor in charge. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Heer.

NOTE: Registration for this course must be approved by the professor in charge.

351. ECONOMIC HISTORY AND THEORY (5 each quarter).

This course is a seminar dealing with the relations between economic history and economic theory. Theories of economic history are analyzed with the purpose of appraising their utility in the realm of general theoretical analysis. Currently used thought tools, or so-called theories, are tested as to their usefulness in the light of historical trends. So far as the materials to be studied are concerned, about equal emphasis will be placed upon historical data and contemporary thought. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Heath.

361. INTERNATIONAL ECONOMIC RELATIONS (5 each quarter).

An increasing share of the economic life of mankind is being lifted out of the sphere of local and national activities, and is being subjected to world-wide influences. This tendency affects not only those business interests of ours directly engaged in foreign trade, but in general reacts upon our political position as a world-power, and materially influences our domestic and economic life.

The aim of this course is to provide graduate students interested in world economics the opportunity of pursuing advanced research along such lines as these: the movement of world prices; international commodity price control; the world food problem; the population question; advancing industrialization and future supply of raw materials; problems of international law affecting economic activities; foreign investments; commercial treaties; colonial policy, etc. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Zimmermann.

NOTE: Registration for this course must be approved by the professor in charge.

371. RESEARCH IN ECONOMIC STATISTICS (5 each quarter).

This course is designed to allow individual study and research by qualified graduate students in specialized fields of economic statistics, such as business cycle, statistical analysis, economic forecasting, price index number problems, regional business indices, commodity demand studies, or the statistical work of business establishments. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Cowden.

NOTE: Registration for this course must be approved by the professor in charge.

382. SEMINAR IN PRIVATE FINANCE (5 each quarter).

The scope of this course will depend on the interests and preparation of the student, but an opportunity will be given for a more advanced study of commercial banking, central banking policies, and the forces operating in the money and capital market. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Woosley.

NOTE: Registration for this course must be approved by the professor in charge.

385. ECONOMIC DYNAMICS (5 each quarter).

This course focuses upon the changing nature of the modern economic organization. An effort is made to identify the more important of the dynamic elements, and to evaluate the significance of each in the general process of change. Attention is given to the readjustment process and problems of particular industries, as well as to general trade, finance, and social well-being. Topics covered would include consumption behavior, income distribution, capital accumulation, money and credit conditions, new developments in marketing production, transportation. The method of study will be inductive. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Bernstein.

NOTE: Registration for this course must be approved by the professor in charge.

391. HUMAN RELATIONS IN INDUSTRY (5 each quarter).

This course is a seminar in selected topics in labor economics and aims to provide a limited number of graduate students an opportunity of doing critical and constructive work in this field. In view of the fact that there are grave problems connected with the adjustment of the workers to the new industrial and social order that is being developed in the South Atlantic States, a part

of the time is usually devoted to this topic. *Equivalent of five hours a week, fall or winter or spring quarter.* Professor Wolf.

NOTE: Registration for this course must be approved by the professor in charge.

399. SEMINAR (5).

Individual research in a special field under direction of a member of the department.

COMMERCE

Courses for Graduates and Advanced Undergraduates

121. INSURANCE: LIFE (5). Prerequisite, Economics 21-22-23 or equivalent.

A study of the principles and technique of life insurance, including disability, accident, and group insurance. Some attention will also be given to the investment operations of insurance companies. *Five hours a week, winter quarter.* Professor Lear.

122. INSURANCE: FIRE, MARINE, BOND, AND TITLE (5). Prerequisite, Economics 21-22-23 or equivalent.

In this course an effort is made to consider as far as possible the wide range which the insurance function covers and the probable trend of its future development. The topics noted in the title of the course are studied and as many others as time will permit. *Five hours a week, spring quarter.* Professor Lear.

141. TRAFFIC PROBLEMS (3). Prerequisite, Economics 151.

A study of current technical problems in the field of transportation and traffic management. (This course will be given only in case as many as five students register for it.) *Three hours a week, winter quarter.* Professor Heath.

151. PRINCIPLES OF INDUSTRIAL MANAGEMENT (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51.

This course covers the problems involved in the construction, equipment, and administration of a manufacturing enterprise. The unit of study is the factory. The subject matter is treated under four heads: the underlying principles of production, the agencies of production, the control of production operations, and the establishment of production standards. *Five hours a week, fall quarter.* Professor Schwenning.

154. PRODUCTION MANAGEMENT: THEORIES AND PRACTICES (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51.

Current theories of organization and management will be taken up and subjected to careful scientific analysis. Practices will be compared with theories. An attempt will be made to formulate the underlying principles upon which the administration of modern industrial enterprise rests. *Five hours a week, winter quarter.* Professor .....

155. PERSONNEL MANAGEMENT (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51.

A scientific study of the methods of hiring and handling personnel in the various lines of industry. The supply, selection, train-

ing, promotion, transfer, and discharge of employees; the computation and significance of labor turn-over; housing, educational and recreational facilities; the functions of a personnel department with reference to efficiency, and the maintenance of good will between employees and employers. *Five hours a week, winter quarter.* Professor Schwenning.

156. PERSONNEL PROBLEMS (5). Prerequisite, Economics 31-32, Commerce 51.

Among the topics selected for thorough consideration are the role of the personnel department, the problem of morale, job analysis, wage and payment systems, the problem of fatigue in industry, and the relations arising from the National Labor Relations Act. *Five hours a week, spring quarter.* Professor Schwenning.

157. TIME AND MOTION STUDY (3). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51-151. Open only to seniors and graduate students.

A presentation of the elements of time and motion study as a phase of scientific management and as a device used by modern industrial establishments to measure the productive capacity of workers on specific jobs and to set production standards. The course will include a discussion of the following: fundamentals and development of time and motion study; equipment and qualifications of a time study man; collection and tabulation of data; organization of the time study department, etc. Students will be given practice in making time studies and in applying the results. (Alternates with Commerce 154.) *Three hours a week, spring quarter.* Professor .....

158. MANAGEMENT PROBLEMS (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51 and 151.

This course is designed to give advanced students an opportunity to do intensive work on selected problems in the field of production management. *Five hours a week, winter quarter.* Professor Schwenning.

161. ADVERTISING (5). Prerequisite, Economics 21-22-23 or equivalent.

A study of the economics of advertising, the place and function of advertising in business, and the psychological principles applicable to the preparation of advertisements. The chief problems of advertising are discussed from the viewpoint of the executive in charge of marketing who must continually give consideration to what can reasonably be expected from advertising as part of a complete distribution program. Emphasis throughout the course is placed on the ethical aspects of advertising and on the use of research methods in the effective planning and preparation of advertising campaigns. Several outstanding campaigns are studied in detail. Considerable practice is given students in the planning and preparation of advertisements. *Five hours a week, fall or spring quarter. Laboratory fee, $1.00.* Professor Taylor.

163. ADVANCED COURSE IN MARKETING (5). Prerequisite, Economics 124 or Commerce 61 or 161.

This course is for students who wish to do advanced work in the field of marketing. The particular problems considered vary from

year to year depending on the interests of the class. The seminar method is used. *Five hours a week, spring quarter.* Professor Taylor.

165. RETAIL DISTRIBUTION (5). Prerequisite, Economics 21-22-23 or equivalent.

A critical study is made of the general policies and practices of retail institutions such as unit stores, department stores, specialty stores, chain stores, voluntary chains, and mail order houses; and an attempt is made to develop the principles of retail distribution. Among the general topics considered are elements of retail profit, types of retail institutions and types of merchandise, store location, store layout and merchandise classification, sales and service policies, merchandising, pricing policies, brand policies, relations with merchandise sources, and organization. Problems and cases form an important part of this course. *Five hours a week, winter quarter.* Professor Taylor.

169. FOREIGN TRADE PRACTICE (5). Prerequisite, or corequisite, Economics 124.

This course treats of foreign trade as a business profession and serves to prepare for entrance into the field; emphasis throughout is on practical problems.

Part I. The organization of Foreign Trade: export departments; middlemen and their functions; cooperation.

Part II. Methods: direct versus indirect exporting; export campaigns; sales policies.

Part III. Foreign Market Analysis.

Part IV. Paper work and technical procedure in exporting and importing, including foreign trade financing. *Five hours a week, spring quarter.* Professor Drucker.

171. ADVANCED ACCOUNTING (5). Prerequisite, Commerce 71-72.

Lectures with laboratory work. Study of accounting problems and forms for special types of business concerns. Accounting for the organization and liquidation of co-partnerships and corporations, for combinations and consolidations, for trustees and receiverships, branch houses, municipalities, and foreign exchange. *Five hours a week, spring quarter. Laboratory fee, $2.00.* Professor Peacock.

172. ACCOUNTING PRACTICE (6). Prerequisite, Commerce 71 and prerequisite or corequisite, Commerce 72.

A laboratory course. Bookkeeping systems and records for the various industries prevalent in North Carolina are studied and practice sets for each are prepared. A tentative list will include tobacco manufacturing, furniture manufacturing, cotton goods manufacturing, automobile sale agencies and garages, banks in small cities, and municipalities. *Six hours a week, spring quarter. Laboratory fee, $2.00.* Professor Peacock.

173. COST ACCOUNTING (5). Prerequisite, Commerce 71-72.

Lectures with laboratory work. Methods for collection of data relative to prime costs and a careful analysis of various methods of burden distribution. Application of principles will be made in the

laboratory by means of budgets for cost accounting in different classes of enterprise. *Five hours a week, winter quarter. Laboratory fee, $2.00.* Professor Peacock.

175. AUDITING (5). Prerequisite, Commerce 71-72.

Lectures and problems. Kinds of audits, systems of accounts, methods of conducting audits, and problems in auditing. *Five hours a week, fall quarter. Laboratory fee, $2.00.* Professor Peacock.

177. INCOME TAX PROCEDURE (5). Prerequisite, Commerce 71-72.

This course consists of a thorough study of both the Federal and State income tax laws and the problems which arise in the making of the various returns. The preparation of the tax returns and claims for refund will be undertaken as laboratory exercises. *Five hours a week, winter quarter. Laboratory fee, $2.00.* Professor Sherrill.

178. C. P. A. PROBLEMS (3). Prerequisite, Commerce 71-72.

This course deals with the questions and problems given by the different States and the American Institute in their C. P. A. examinations. Typical problems are solved, and solutions prepared by leading accountants of the country are studied. (This course will be given only in case as many as five students register for it.) *Three hours a week, spring quarter.* Professor Peacock.

179. GOVERNMENTAL ACCOUNTING (5). Prerequisite, Commerce 71-72.

Lectures and laboratory work. A study of budgeting accounting and its application to the various governmental units; the differences between fund accounting and commercial accounting; methods of collecting data recorded in books of original entry; and the preparation of financial statements. A survey will be made of systems for educational institutions, and for state, county, and city governments. Laboratory work will consist of practical problems. Field trips will be taken in order to study the system used by the State of North Carolina, the system prepared by the County Government Advisory Commission for counties, and other available systems. *Five hours a week, spring quarter. Laboratory fee, $2.00.* Professor Sherrill.

181. ADVANCED BANKING (5). Prerequisite, Economics 81.

A study of the organization and operations of banks; analyses of bank assets, liabilities, earnings, and expenses; the interrelations between the trends in business and banking policies. *Five hours a week, spring quarter.* Professor Woosley.

191. CORPORATION FINANCE (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51 and 71.

A study of the principles and practice of corporate financing. Among the topics considered are the methods of raising permanent capital, problems of current financing, the treatment of earnings, and financial problems incident to expansion and reorganization. Specific problems and reports are employed to illustrate and emphasize the principles involved. *Five hours a week, fall or winter quarter.* Professor Woosley.

192. CORPORATE FINANCIAL POLICIES (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 51, 71 and 191.

A more extended study of financial policies with special reference to problems of expansion, consolidation, and reorganization. *Five hours a week, winter quarter.* Professor Woosley.

195. INVESTMENTS (5). Prerequisite, Economics 21-22-23 or equivalent, Commerce 71-72, 191.

This course is essentially a laboratory study of corporate securities from the standpoint of the investor. Primary emphasis is placed upon the development of technique and standards of investment analysis. *Five hours a week, spring quarter.* Professor Woosley.

Courses for Graduates

207. THE FUNCTION AND THEORIES OF MANAGEMENT (5). Prerequisite, Commerce 51 or equivalent.

This course analyzes the function of management in contemporary business organization together with the theories involved in the direction of enterprises. Among the topics considered are the function of management; the management movement; the utilization of the scientific method in management; the laws of organization; scientific management; and the types and theories of management organization. The subject matter will be considered from both functional and social viewpoints. *Five hours a week, winter quarter.* Professor Schwenning.

301abc. SEMINAR IN COMMERCE (with thesis 5).

A general introduction to methods of advanced study. Some phase of business activity in harmony with the interests of the members of the seminar is selected for consideration. Methods of work and content receive about equal emphasis. *Fall, winter, and spring quarters.* Professor Woosley (Chairman).

399. SEMINAR (5 each quarter).

Individual research in a special field under direction of a member of the department.

DEPARTMENT OF EDUCATION

*Marcus Cicero Stephens Noble, **Harl R. Douglas, ***W Carson Ryan, Edgar Wallace Knight, Arthur Melville Jordan, William John McKee, Roy Williamson Morrison, Oliver Kelly Cornwell, Carleton Estey Preston, Professors.

Howard Frederick Munch, Preston Cooke Farrar, John Minor Gwynn, Hugo Giduz, Arnold Kimsey King, Associate Professors.

Floyd Theodore Siewert, Assistant Professor.

William Decatur Perry, Instructor.

It is the primary function of the Department of Education to train teachers and administrative officers for the public schools, normal schools, teachers' colleges, and departments of education in colleges and universities. This training must include not only an intimate knowledge of subject matter and methods of instruction, but also skill in the collection and interpretation of the facts necessary in the intelligent adaptation of sound educational theory to local needs and to the individual differences of pupils.

As a consequence, there are offered in this department three types of courses: (1) those which present the facts and theories upon which modern education is founded; (2) those which develop the skills and attitudes necessary in the conduct of modern schools; (3) those which aid and stimulate the student in the discovery, interpretation, and improvement of school conditions.

The Department of Education is centralized in the Peabody Building, a gift of the George Peabody Fund, equipped with recitation rooms, offices, laboratories, and a seminar room. It has entered into active cooperation with the Chapel Hill Board of Education by which the elementary and secondary units of the local school system are open for the use of faculty and students in the department.

Research is carried on in the history of education in the South, in specialized aspects of educational psychology, such as the psychology of discipline, of learning, and of individual differences; in elementary education; in secondary education; and in the various aspects of educational organization, administration, and supervision. An increasing amount of research is being done in the fields of guidance, the curriculum,

* Kenan Professor Emeritus.
** Resigned, effective March, 1940.
*** Assumed duties, April, 1940.

and extra-curricular activities. The research problems data on which members of the Department of Education are working have been taken largely from the public educational institutions of the State and region.

The Bureau of Educational Research and Service serves as a permanent center for organizing, conducting, and assembling the results of all types of educational research projects. Through this bureau many public school officials and sectional organizations have been stimulated, assisted, and directed in significant investigations of vital educational problems.

Appointment Service

Both the Department of Education and the Graduate School operate employment services for graduate students. A very high percentage of those receiving degrees are placed in educational positions by these agencies.

Curriculum Laboratory

In Peabody Hall, a classroom has been fitted with shelves, tables and chairs to serve as a workroom for those interested in curriculum problems and projects. In this room will be found a collection of state, county, and city courses of study, textbooks in all subjects and related books, reports and periodicals, totaling more than 2,000 items.

The High School Journal

The High School Journal is a professional periodical published by the University of North Carolina Press, devoted to various aspects of secondary education, with a nation-wide circulation list. Issued eight times a year, its columns are open to contributors everywhere, but particularly to authors in North Carolina and the South, and include reports of research, essays, editorials, and professional news.

Requirements for Advanced Degrees

The Department of Education offers programs leading to the following degrees: Master of Arts, Master of Arts in Education, Master of Education and Doctor of Philosophy. The requirements for the degrees of Master of Arts and Doctor of Philosophy in all departments in the University are discussed elsewhere in this catalogue. For those who are interested only in professional training for educational positions in which highly specialized training in research techniques is not essential, the programs leading either to the degree of Master of Arts in Education or Master of Education have been provided.

Further information concerning these degrees may be obtained from the section in this catalogue on "professional degrees."

Students taking a major program in education must demonstrate on the written examination for the master's degree proficiency in two of the following fields: Educational Psychology, Elementary Education, History and Comparative Education, Guidance and Personnel Work, Physical and Health Education, Secondary Education, and Educational Administration and Supervision. During the student's first quarter in residence he should select, in consultation with the Head of the Department of Education, an adviser. His adviser will help him plan his program and may also direct his thesis. The final oral examination will be on the student's thesis, his minor, and the two fields on which he has taken his written examination selected from the list given above.

All candidates for advanced degrees are advised to take such tool subjects as Methods of Educational Research or Statistical Methods at the beginning of their period of graduate study.

Physical Education

The Department of Education offers to graduate students a major in the field of health and physical education. This major is designed to prepare students for teaching of health education and physical education on the elementary, secondary, and college levels. Adequate library and laboratory facilities are available for advanced study in these subjects. The physical equipment for laboratory work in fields of sports is provided in the new building for physical education. The library and laboratory facilities of the Medical School and the Division of Public Health will be available for advanced work.

The prerequisites for graduate work in health education and physical education are: (1) certain basic courses in the field of biological science (equivalent to Zoology 41 and 42), (2) elementary anatomy and physiology, (3) adequate background in education.

The graduate student with a major in this field is required to carry work in the following areas: (1) principles, organizations, and administration of health and physical education, (2) personal and community hygiene, (3) individual, remedial, and corrective physical education, (4) techniques of problem-solving and research, (5) electives in the fields of education, recreation, sociology, and psychology.

Courses for Graduates and Advanced Undergraduates

(Note: The large majority of all graduate courses in education will be given in one of the two summer terms every summer).

101ab. BASIC PRINCIPLES AND TECHNIQUES IN EDUCATIONAL ADMINISTRATION (5).

The first half of this course will include the basic principles involved in school administration and is designed particularly for teachers who wish to get a review of the fundamentals of the organization and administration of American public schools, and for students desiring to prepare later for general administrative positions. Attention will be given to the organization, administration, and financial support of public schools in federal, state, and local school districts; work of school boards, retirement and tenure, professional ethics; public relations; and relationships of the teacher in modern educational administration.

The second half of the course will deal with practical techniques in educational administration concerning (1) teacher and pupil personnel problems; (2) school records, and reports; (3) age-grade progress studies; (4) pupil classification and promotion; (5) transportation and consolidation; and (6) general administration of allied school activities. *Two and a half hours a week, fall and winter quarters.* Professor Phillips or .....

102. ELEMENTARY SCHOOL ORGANIZATION AND ADMINISTRATION (2½).

The qualifications, duties, and opportunities of the elementary school principal as an educational leader will be studied. Particular attention will be given to the practical organization of the staff, administrative organization of the instructional and extra-curriculum program, classification and promotion of pupils, provision for atypical children, library service, and health education. The course is designed particularly for elementary school principals, teachers, and others desirous of becoming more familiar with the problems of elementary school administration. *Two and one-half hours a week, winter quarter.* Professor Phillips or .....

103ab. ELEMENTS OF STATISTICAL METHODS IN EDUCATION (5). Prerequisite, Education 71 or equivalent. Required for the Master of Arts in Education except in case of those doing historical research.

This course provides the statistical training necessary for understanding the reports of modern educational investigations and for conducting simple investigations. In 103a consideration will be given to procedures in tabulating data; calculating measures of average, variability; sampling the properties and applications of the normal probability curve and methods of measuring reliability of educational data, and the use of graphic methods in education. In 103b the major attention will be given to methods of measuring correlation and the interpretation of coefficients of correlation; continued study of sampling and reliability. *Two and a half hours a week, fall and winter quarters.* Professor Jordan or Professor Munch.

104. TECHNIQUES IN EDUCATIONAL LEADERSHIP (2½).

The techniques by which communities may be led more effectively to work for better schools. The use of school reports, public

meetings and programs, newspapers, campaigns, and professional organizations will be studied with a view to determining the most effective procedures for gaining community support for the program of the school. *Two and one-half hours a week, alternate spring quarters.* Professor Phillips.

105ab. GUIDANCE AND ADMINISTRATION OF PUBLIC SCHOOL PUPILS (2½). Prerequisite, six full courses in education, including 103a or its equivalent.

(a) The first half of the course is a comprehensive introduction to the philosophy, areas, techniques, and plans of organization of guidance.

(b) The second half of the course is concerned with the interpretation of various types of guidance data and with the homeroom as an instrument for guidance. *Two and one-half hours a week, alternate fall and winter quarters.* Professor Morrison or .....

106. GENERAL PRINCIPLES OF OCCUPATIONAL DIAGNOSIS AND GUIDANCE (5). Prerequisite, practical experience and at least two years of psychology and education.

This course is designed to provide a broad introduction to this field for graduate students who have had adequate training in general psychology and some practical experience in business, industry, or a profession. Two fairly distinct groups of students are invited to register for the course: (a) those who plan to become personnel or placement officers in public employment offices, industrial and commercial firms, schools, or colleges; (b) teachers, supervisors, and administrative school officers. *Five hours a week, alternate fall quarters.* Professor Bradshaw (of the Department of Philosophy.)

110. PHILOSOPHY OF MODERN EDUCATION (5).

The biological, psychological, and sociological principles underlying modern life in a democracy will be examined critically as a basis for a sound philosophy of modern education. Readings, reports, observations, and discussions. *Five hours a week, alternate fall quarters.* Professor Bradshaw (of the Department of Philosophy.)

130. PRINCIPLES AND METHODS IN ADULT EDUCATION (2½).

Consideration will be given in this course to (1) principles in organizing adult study groups; (2) how adults learn; (3) guidance and counselling of adults; (4) preparing curriculum materials for adult groups; and (5) teaching and learning methods and techniques in adult education. It is designed for professional and lay leaders of adults and others interested in the administration and supervision of adult education. *Two and one-half hours a week, alternate spring quarters.* Professor .....

131. ADULT EDUCATION—A General Survey (2½).

Consideration will be given in this course to (1) current developments in adult education in the United States and foreign countries; (2) the history and philosophy of adult education; (3) the place of specialized fields in adult education; and (4) problems in managing adult education programs. It is particularly designed for teachers and supervisors in adult education, lay workers, school superintendents, and others interested in this field. *Two and a half hours a week, alternate spring quarters.* Professor .....

141. EDUCATION IN THE SOUTH (5).

This course gives an historical survey of education in the southern states with special attention to its development, organization, administration, and supervision since 1876. Problems in the educational reorganization need for the solution of school problems in the southern states will be studied. *Five hours a week, alternate spring quarters.* Professor Knight.

142. HISTORICAL FOUNDATIONS OF MODERN EDUCATION (5).

This course traces the development of some of the more important educational problems of modern times as they have been affected by the social and political facts of history, by the contributions of the leading educational theorists, and by institutional practice. Textbooks, lectures, investigations, and reports. *Five hours a week, winter quarter.* Professor Knight.

143. SOCIAL AND EDUCATIONAL HISTORY OF THE UNITED STATES (History 170) (5).

The social and educational institutions and practices of the United States are traced through: (a) the period of transplanting of European institutions; (b) the period of modifications of institutional life to meet new conditions; and (c) the period of development of a social and an educational system of free common schools, high schools, and higher and technical education in harmony with the political and social ideals and institutions of America. Textbook, lectures, investigations, and reports. *Five hours a week, fall quarter.* Professor Knight.

144ab. RURAL EDUCATION (5).

A course planned to meet the needs of rural school teachers, principals, supervisors, and superintendents. Consideration will be given to the organization, administration, and supervision of rural school education in the United States, with special emphasis on present conditions in the South. *Five hours a week, alternate winter quarters.* Professor .....

145. COMPARATIVE EDUCATION (5).

This is a course in comparative education with emphasis upon the modern educational experience of and the more significant educational movements in certain foreign countries. Attention will be given to education as a means of national advancement and to the development of retarded national cultures through education. *Five hours a week, spring quarter.* Professor Knight.

146. CONTEMPORARY ISSUES AND TRENDS IN EDUCATION (5).

A study of tendencies and developments in elementary, secondary, and higher education and in teacher training in the United States since 1900. *Five hours a week, spring quarter.* Professor Knight.

147. HIGHER EDUCATION IN THE UNITED STATES (5). Prerequisite, Education 142 or Education 143 or equivalent.

The development and present conditions of higher education in the United States; its organization, administration, support, curriculum, faculty and student relations; the rise of denominational

colleges, the rise of state universities; the Morrill Acts and the Land-Grant Colleges; the expansion of graduate work; the junior college movement; recent developments; "New College Plans." *Five hours a week, fall and summer quarters.* Professor Knight.

152ab. THE TEACHING AND SUPERVISION OF THE LANGUAGE ARTS IN THE ELEMENTARY GRADES (5).

(a) Oral and written expression, spelling, penmanship and grammar will be considered during the first half of this course. (b) Reading and children's literature will be discussed during the second half of the course. *Five hours a week, alternate fall quarters.* Visiting Professor Tippett.

154. THE TEACHING AND SUPERVISION OF THE SOCIAL STUDIES IN THE ELEMENTARY GRADES (5).

The problems involved in supervising the organization, teaching, and evaluation of the elementary school program in history, geography, and the other social studies will be discussed in this course. Special attention will be given to recent experimental programs and recent materials. Readings, reports, investigations, and discussions. *Five hours a week, alternate spring quarters.* Professor King.

155. THE TEACHING AND SUPERVISION OF THE NATURAL SCIENCES IN THE ELEMENTARY GRADES (2½).

This course considers the purposes and position of science in the elementary school curriculum, and seeks to lay a foundation for improved teaching within the field. Content will be largely determined by the needs of the particular group. *Two and one-half hours a week, alternate spring quarters.* Professor Preston.

156. THE TEACHING AND SUPERVISION OF ARITHMETIC IN THE ELEMENTARY GRADES (2½).

The organization and selection of subject matter in arithmetic together with modern methods of teaching this subject in the elementary school. This course is designed for both teachers and supervisors. *Two and one-half hours a week, alternate spring quarters.* Professor .....

160ab. CURRICULUM CONSTRUCTION (5).

Open to seniors and graduate students with 25 quarter hour credits in education.

(a) The general principles and techniques of curriculum construction on both elementary and secondary school levels will comprise the major part of this course. Special attention will be focused upon recent trends in curriculum revision and organization in our modern schools. (b) This is a continuation of Education 160a in its *application* to the elementary and secondary schools. Problems and laboratory work will constitute a major part of the work. Special examination of recent state and city courses of study will aid in analyzing trends and proposed changes in the various subjects and activities of the curriculum. Individual and group committee work. *Two and one-half hours a week, alternate fall and winter quarters.* Professor Gwynn.

161. TECHNIQUES AND PROCEDURES OF PROGRESSIVE EDUCATION (2½).

The philosophy, principles, and criteria of progressive education; application of progressive principles to developing and evalu-

ating course of study units. Modern procedures for employing these units, so as to secure desired individual and social values, receive considerable attention. *Two and one-half hours a week, alternate winter and spring quarters.* Professor McKee.

162. TEACHING PUPILS HOW TO STUDY (2½).

The physical and environmental factors that condition effective study, the necessary preliminary preparations for study, techniques for discovering a pupil's present study habits in each subject-matter field, the evaluation and improvement of study habits, and techniques for the supervision of practice and growth in each type of study will be conducted. *Two and one-half hours a week, alternate winter quarters.* Professor McKee.

163. SELF EVALUATION AND SELF IMPROVEMENT OF CLASSROOM TEACHERS (2½).

The primary consideration in this course is the development of both the attitudes and techniques which will enable teachers to appraise and improve their classroom work. It will stress the purposes and needs for such self appraisal, the types and agencies of evaluation, the techniques which can be utilized, the interpretation of results and the developing of practical programs of improvement. *Two and one-half hours a week, alternate spring quarters.* Professor McKee.

165. INVESTIGATIONS IN READING (2½).

This course will deal more intensively with such phases of the subject as cannot receive adequate emphasis in the regular methods course. Among the topics which will receive special consideration are recent investigations of reading abilities and their import; children's interests in reading; analysis of the content of readers now in use in school libraries; reading tests; diagnostic and remedial work. *Two and one-half hours a week, alternate fall quarters.* Visiting Professor Tippett.

170. PSYCHOLOGY OF THE ELEMENTARY SCHOOL SUBJECTS (5).

The applications of important findings of experimental research and of accepted theories of Psychology to the effective teaching and learning of the materials in the various subject matter fields. Each subject will be treated in relation to its possibilities for the growth and development of socialized personalities, emphasizing both a motivated, constructive approach and a diagnostic remedial attack on pupil's liabilities and difficulties. *Two and one-half hours a week, alternate fall and winter quarters.* Professor McKee or Professor Jordan.

171. GROWTH AND DEVELOPMENT OF THE SCHOOL CHILD (5).

a. Child development (2½). A study of the growth and development of children up to the time of adolescence. Changes in emotions are emphasized as well as those of intellect. b. Adolescence (2½). A study of the changes in emotions, attitudes and interests which take place during the adolescent years. The underlying physiological changes are, of course, not neglected. *Five hours a week, spring quarter.* Professor Jordan or Mr. Perry.

172. THE PROBLEMS OF MALADJUSTMENT AMONG CHILDREN (2½).

Factors of personality maladjustments, of delinquency, and of emotional instability; various methods of therapy to be followed in the treatment of the more typical behavior difficulties. Case studies will be used to analyze such classroom problems as fear, jealousy, social maladjustments, and failures. *Two and one-half hours a week, winter quarter.* Mr. Perry.

173. MENTAL MEASUREMENTS (5). Prerequisite, one course in Educational Psychology or a course in general psychology.

A study of mental tests both individual and group. The origin of tests will first be considered, followed by a comparative study of the various types of group and individual tests. Tests of intelligence, interests, emotional stability, and of other personality tests will be treated. Ample opportunity will be offered for the actual administration of tests and the interpretation of their results. *Five hours a week, alternate spring quarters.* Professor Jordan.

174. USE AND INTERPRETATION OF EDUCATIONAL TESTS AND MEASUREMENTS (5).

a. Study of the needs for objective measure of educational outcomes is first made. There follows a treatment of the elementary principles of test construction, of the criteria used in the selection and appraisal of tests, and of the best techniques to be used in constructing informal classroom tests. b. A continuation of 174a into the specific fields of interest whether in high school or elementary school tests. A thoroughgoing analysis of the principles of test construction of standard tests is made, as well as a survey of the tests in one or more fields. (174a is prerequisite for 174b.) *Five hours a week, fall quarter.* Professor Jordan or Professor Morrison.

175. EXTRA-CURRICULAR ACTIVITIES (3).

Clubs, student participation in school government, physical education, publicity in school publications, commencement, many miscellaneous topics, theoretical and practical studies of institutions promoting successful programs, bibliographical materials. *Three hours a week, winter quarter.* Professor Meyer (of the Department of Sociology).

181. MATERIALS AND METHODS OF TEACHING HIGH SCHOOL ENGLISH (5).

The aims, courses of study, and methods found most effective in the teaching of grammar, composition (oral and written), and the different types of literature to pupils of high school age. Applicants should be thoroughly grounded in the fundamental principles of English grammar, should write and speak well, and should have more than average ability to appreciate literature. *Five hours a week, fall or spring quarters.* Professor Farrar.

183. MATERIALS AND METHODS OF TEACHING HIGH SCHOOL FRENCH (5).

In this course the student studies the development of modern language teaching. Particular stress is laid on present-day tendencies, more especially in connection with pronunciation, phonetics, reading, "realia," activities, texts, etc. Weekly reports on readings. Term paper. *Five hours a week, every quarter.* Professor Giduz.

185. MATERIALS AND METHODS OF TEACHING THE SOCIAL STUDIES (5).

This course is organized around the following major divisions: first, an introduction to the social studies, their development, scope, place in the curriculum, and objectives; second, the course of study, including organization of subject matter and selection of materials and equipment; third, methods of instruction, an examination and evaluation of certain techniques; fourth, the use of teaching aids, such as visual materials, workbooks, and current literature; and finally, the construction, use and interpretation of tests in the social studies. Readings, special investigations, reports, and discussions. *Five hours a week, fall or winter quarter.* Professor King.

187. MATERIALS AND METHODS OF TEACHING HIGH SCHOOL LATIN (5).

The history of the teaching of Latin will be discussed along with modern tendencies of instruction in this field. A special study will be made of high school Latin texts, and reports and discussions will emphasize the various methods used in teaching them. Helpful bibliographies will be compiled and examined. *Five hours a week, winter quarter.* Professor Gwynn.

189. MATERIALS AND METHODS OF TEACHING HIGH SCHOOL MATHEMATICS (5).

A course designed to give those preparing to teach mathematics in high school a comprehensive view of that field. It is composed of six units as follows: history of mathematics, objectives of mathematics teaching, materials, methods, the psychology of mathematics teaching, and measuring achievement in the field of mathematics. Reading and reports on these units will be required. *Five hours a week, fall quarter.* Professor Munch.

191. MATERIALS AND METHODS OF TEACHING HIGH SCHOOL SCIENCE (5).

The objectives and curriculum position of secondary school science, the proper teaching viewpoint, instructional techniques, selection and use of equipment, evaluating results of science teaching. Trends of change in secondary school science in response to changing economic, social, and educational developments are emphasized. Assigned readings introduce the important literature. *Five hours a week, fall or winter quarter.* Professor Preston.

193. MATERIALS AND METHODS OF TEACHING DRAMATICS IN HIGH SCHOOL (5).

This course includes consideration of the teaching of oral English, the correction of speech faults, the teaching of dramatic literature and playwriting, the selection and production of plays, and the direction of dramatic clubs. To teach the written English required in the state elective in drama, applicants should be as well grounded in English fundamentals as applicants for Education 181. *Five hours a week, winter quarter.* Professor Farrar.

195. YOUTH PROBLEMS AND THE SCHOOLS (2½).

A survey of the principal problems of youth today, along with some of the more recently developed youth-serving agencies; unemployment, marriage, citizenship, morality, health, religion, leisure, and recreation; needed adjustment in the schools. *Two and one-half hours a week, alternate spring quarters.* Professor .....

196. THE JUNIOR HIGH SCHOOL (2½).

Forces and conditions giving rise to the junior high school; its special purposes; plans of organization; curriculum; methods of teaching; extra curricular activities; provisions for individual differences for teachers and administrators. *Two and one-half hours a week, alternate fall quarters.* Professor .....

197. SOCIAL POLICY AND EDUCATION (2½).

Fundamental problems in the social and ethical theory of education. Lectures, prescribed readings, essays, and reports. This course deals with problems of social progress from the standpoint of education, attempts to define a social policy for education, and discusses the vital educational issues involved in that policy. *Two and one-half hours a week, alternate winter quarters.* Professor .....

198ab. SUPERVISION OF INSTRUCTION (5).

a) The nature and functions of supervision, recent trends in theory and practice, teacher participation in policy formation, the organization and planning of supervision, and the training and qualifications of the supervisor; classroom observation, devices for recording observations, and the supervisory post-observation conference. b) Specific techniques and devices of supervision, including standards for judging teachers and teaching, professional tests for teachers, and teacher rating; the practical application of the techniques in supervisory services to curriculum improvement, the measurement of pupil progress, pupil and teacher relationships, extra-curricular responsibilities, and guidance. *Two and a half hours a week, fall and winter quarters.* Professor Gwynn or Professor McKee.

199. SECONDARY EDUCATION IN THE UNITED STATES (5). Prerequisite, four full courses in education.

The American high school, its evolution, organization, administration, functions, curriculum, and current developments. *Five hours a week, spring quarter.* Professor .....

Courses for Graduates

201. PROCEDURES IN EDUCATIONAL RESEARCH (2½).

Required of all candidates for higher degrees in the fields of educational administration, secondary education, and elementary education; and is designed particularly to assist students in selecting problems for theses and in organizing and writing master's and doctor's theses. Consideration will also be given to (1) the function of research in education; (2) types of research and the principal techniques of each type; (3) organization and interpretation of data; and (4) preparing and evaluating research reports. *Two and one-half hours a week, fall quarter.* Professor .....

204. BUSINESS MANAGEMENT AND SCHOOL FINANCE (2½). Prerequisite, Education 101 or its equivalent.

The sources of public revenues, problems of state and federal taxation for schools, principles of school finance, school budget problems, public school accounting, and accounting for extra-curricular and student-body funds within the school. Records and reports of prominent school systems will be examined with a view to

giving the students a broad background in the field of public school business administration and finance. *Two and one-half hours a week, alternate winter quarters.* Professor .....

206. SCHOOL PLANT AND EQUIPMENT MANAGEMENT (2½). Prerequisite, Education 101 or its equivalent.

Study will be given to practical problems in the operation and maintenance of public school buildings, improvement of school grounds, management of equipment and supplies, improvement of custodial service, school building surveys, and the construction and remodeling of school buildings. *Two and one-half hours a week, alternate spring quarters.* Professor .....

208ab. STATE AND COUNTY SCHOOL ORGANIZATION (5).

Deals with the fundamental principles of educational administration as they apply to organized State and county school systems. Problems in the organization, administration, and financial support of these units will be studied. Designed to meet the needs of experienced teachers, principals, supervisors, and superintendents. *Five hours a week, alternate winter quarters.* Professor .....

271ab. PROBLEMS IN EDUCATIONAL PSYCHOLOGY I (5). Prerequisite, one or preferably two courses in educational or developmental psychology.

a. *Individual Differences* (2½). An intensive course in the causes and educational provisions for individual differences.

b. *Problems of Conduct* (2½). Considers problems of maladjustment in the fields of character, intellect, and emotions. *Five hours a week, fall quarter.* Professor Jordan.

272ab. PROBLEMS IN EDUCATIONAL PSYCHOLOGY II (5). Prerequisite, one or preferably two courses in educational and developmental psychology.

a. *Psychology of Learning* (2½). An intensive study of the theoretical aspects of learning.

b. *Psychology of Learning* (2½). Emphasis in this course is on the practical applications of the theories developed in 272a. *Five hours a week, winter quarter.* Professor Jordan.

273. TESTS AND MEASUREMENTS IN GUIDANCE (5). Prerequisite, an elementary course in statistics or its equivalent is recommended.

A study of the principles of test construction and of the application of these various types of measures to educational and vocational guidance. Tests of intelligence, achievement, trade, personality—including those of interest and emotion—rating scales, aptitude tests, and other methods of collecting data about the individual are critically evaluated. *Five hours a week, fall quarter.* Professor Jordan.

285. INVESTIGATIONS AND TRENDS IN TEACHING THE SOCIAL STUDIES (2½).

The purpose of this course is to give graduate students an opportunity to become familiar with studies and investigations dealing with the philosophy, organization, and teaching of the social studies; and to evaluate critically recent trends in this field. The recent re-

ports of national committees, the results of experimental research, the organizations of experimental programs, and new types of teaching materials will be examined. Readings, investigations, reports, and discussions. *Two and one-half hours a week, alternate fall quarters.* Professor King.

296ab. THE ORGANIZATION AND ADMINISTRATION OF SECONDARY SCHOOLS (5). Prerequisite, two courses in secondary education.

a) Organization of secondary school units, housing; selecting and assigning the staff; schedule making; organization of guidance and of extra-curricular activities. b) Organization and administration of discipline, student participation in government and management. Public relations, and publicity; pupil, equipment, and internal fund accounting and related problems of administration; government; and problems of organization and administration relating to instruction. *Five hours a week, alternate winter quarters.* Professor Gwynn or .....

303abc. PROBLEMS IN EDUCATIONAL ADMINISTRATION (2½ to 7½). Prerequisite, Education 101 or its equivalent and one other course in educational administration.

A graduate course offering opportunity for intensive study and research on selected problems or school surveys in the field of educational administration. The problems will be selected by the individual class members each quarter, making it possible for students to take this course more than once. *Two and a half hours each week, any quarter.* Professor Gwynn or .....

304. PROBLEMS IN EDUCATIONAL PSYCHOLOGY (2½ to 7½). Prerequisite, Education 164 or 194.

Students who wish to specialize in educational measurements may take this course more than once if desired, since the problems considered will differ from year to year. *Two and a half hours a week, any quarter.* Professor Jordan.

341abc. FOUNDATIONS OF MODERN EDUCATION (2½ to 7½).

This is a research course in modern educational practices and institutions and is open only to those advanced students who have had Education 142, 143, or the equivalent. Various educational agencies will be studied through investigations, reports, and conferences. *Two and one-half hours a week, fall, winter, and spring quarters.* Professor Knight.

350. PROBLEMS IN ELEMENTARY EDUCATION (2½ to 7½).

This is an advanced course in the study and investigation of the most crucial problems and topics in the field of elementary education. It is meant primarily for principals, supervisors, and experienced teachers. Emphasis will be placed not only on finding solutions to problems but on the development of techniques for the defining, analyzing, and planning of attacks on problems. *Two and one-half hours a week, any quarter.* Professor McKee or Professor Morrison.

375. THESIS COURSE (Maximum with thesis 5).

This is a course in which a student engaged upon a thesis enrolls with his thesis adviser. Professors in the Department of Education.

376. SEMINAR COURSE (2½ to 7½). A research course in a special field under the direction of a member of the department. Students may register and receive credit for one, two, or three quarters. *Two and a half hours a week, fall, winter, and spring quarters.* Staff.

398abc. PROBLEMS IN SECONDARY EDUCATION (2½ to 7½). Prerequisite, two previous courses in secondary education.

This course provides the opportunity for graduate students to carry on either (a) an intensive study of some topic in secondary education employing library techniques and resources, or (b) a limited research project, or (c) a field study in a secondary school employing modern techniques of investigation; a written report is required. The course may be taken for more than one quarter. *Two and a half hours a week, every quarter.* Professor .....

PHYSICAL EDUCATION

Courses for Graduates and Advanced Undergraduates

120. PRINCIPLES OF PHYSICAL EDUCATION (3 or 2½). Prerequisite, undergraduate work in education and psychology.

The nature of physical education and its relation to general education, health education, and community recreation. A critical analysis of basic physiological, sociological, and psychological principles in terms of their application to practices and procedures in physical education. *Three hours a week, fall quarter; or five hours a week, first term of summer session.* Professor Cornwell.

121. ADMINISTRATION OF PHYSICAL EDUCATION (5 or 2½).

Fundamental policies in the organization and administration of physical education programs. Problems in program building, classification of students, scheduling, teacher load, administration of facilities, budget and finance, and the relationship of athletics to physical education. *Five hours a week, winter quarter; or five hours a week, first term of summer session.* Professor Cornwell; Assistants.

123. PERSONAL HYGIENE (3 or 2½). Prerequisite, basic courses in science.

A study of the problems of living as they involve the health of people. Anatomical and physiological materials pertinent to the functioning of the organism. The place of intelligent control in terms of personal health in modern civilization. Various aspects of health teaching receive consideration. *Three hours a week, fall quarter; or five hours a week, second term of summer session.* Professors Cornwell, Siewert.

s126ab. INDIVIDUAL PHYSICAL EDUCATION (5 or 2½). Prerequisite, anatomy and physiology, or equivalent.

This course deals with fundamental principles in the selection and adaptation of activities in corrective procedures. Methods of examining and determining individual needs, activity program of both formal and informal character to meet the needs of various students in schools and colleges will be the problem dealt with in the course. *Five hours a week, second term of the summer session.* Professor Siewert.

127. INTRAMURAL AND EXTRAMURAL ACTIVITIES FOR SCHOOLS AND COLLEGES (2½).

The study of the intramural and extramural program in terms of organization and administration. A critical analysis of the seasonal sports programs with a view to their justification from the standpoint of objectives, age level, and contribution to the general welfare of the students participating. *Three hours a week, spring quarter; five hours a week, second term of summer session.* Professor Siewart.

173 (Sociology 173). PLAY AND RECREATION (5).

The theories of play, play activities, attitudes, history of the play movement, play leadership, programs, values, sex and age differences, classification of movements, application to community life. *Five hours a week, spring quarter.* Professor Meyer (Sociology).

175 (Sociology 175). EXTRA-CURRICULAR ACTIVITIES (3).

Clubs, student participation in school government, physical education, publicity in school publications, commencements, many miscellaneous topics, theoretical and practical studies of institutions promoting successful programs, bibliographical materials. *Three hours a week, winter quarter.* Professor Meyer (Sociology).

Courses for Graduates

220. TESTS AND MEASUREMENTS IN PHYSICAL EDUCATION (3 or 2½).

This course is designed to familiarize the student with various tests and measurements in the field of health and physical education. Special attention is given to methods of giving and scoring tests, as well as to uses to be made of results obtained. An evaluation of various test materials and testing programs form an important part of the course. *Three hours a week, spring quarter; or five hours a week, first term of summer session.* Professor Cornwell.

221. PHYSIOLOGY OF EXERCISE (5). Prerequisite, zoology and anatomy.

The physiology of growth and development. The effects of excesses of speed, strength, skill, and endurance on circulation, respiration, nervous system, and the body as an organism. Relation of age and sex to body function. *Five lecture and four laboratory periods a week, first term of summer session; or similar hours and laboratory work in the winter quarter.* Professor Ferrill.

s222. PRINCIPLES OF HEALTH EDUCATION (2½). Prerequisite, adequate background in science.

This course, dealing with programs, principles, and materials of public school health, will present a wide range of scientific and educational materials for courses of study. Students will set up courses of study and programs for typical situations, and will plan cooperative programs for instruction in health in the school. *Five hours a week, second term of summer session.* Professor Brown.

s224. SCHOOL AND COMMUNITY HYGIENE (2½). Prerequisite, adequate background in science.

Includes a general survey of the fundamental principles of sanitary science and disease prevention and their application to water

supply, milk and general food supply, sewage disposal, school sanitation, and the general problems that deal with control of infectious diseases. *Five hours a week, second term of summer session.* Professor Brown.

225. MODERN PROBLEMS IN PHYSICAL EDUCATION (3). Prerequisite, experience and advanced work in physical education and education.

This course is designed to give the teacher a better understanding of the current problems associated with health and physical education. Reports of committees and contributions made by individuals to the field are discussed and evaluated. *Three hours a week, winter quarter.* Professor Cornwell.

s320. RESEARCH IN PHYSICAL EDUCATION (5 or 2½). Prerequisite, experience and advanced work in the field.

This course offers direction in the study of problems growing out of activities of physical education. Students who register must be experienced teachers and must have problems which they desire to study. *Five hours a week, spring quarter; or five hours a week, first or second term of the summer session.* Professors Cornwell and Siewert.

341abc. SEMINAR COURSE (2½ each quarter). Prerequisite, adequate training and experience, and consent of instructor.

A research course in a special field. *Three hours a week, fall, winter, and spring quarters.* Professors Cornwell, Siewert, Ferrill, Brown.

DEPARTMENT OF ENGLISH

George Raleigh Coffman, Frederick Henry Koch, John Manning Booker, George Coffin Taylor, *William Flint Thrall, Gregory Lansing Paine, Arthur Palmer Hudson, Almonte Charles Howell, Dougald MacMillan, Eston Everett Ericson, Raymond William Adams, Richmond Pugh Bond, Professors.

Robert Boies Sharpe, Associate Professor.

The Department of English offers to graduate students research in English language and in English and American literature leading to advanced degrees. Training is afforded by specialized courses in literature and language and in historical and critical aspects of the drama. Intensive study and research are made effective through advanced lecture courses and the seminars, through a well-equipped library, and through the stimulus of association with men who are actively engaged in research. The resources of the University Library have been greatly strengthened through the use of grants from the General Education Board for the purchase of bibliographical aids and other research materials. In English philology, in general Medieval and Renaissance literature, in eighteenth-century plays and periodicals, in Romantic and Victorian literature, and in American drama considerable bodies of material have been added. Graduate students in English have access also to the large and important collection of Southern Historical manuscripts (containing approximately one and a half million items,—letters, diaries, etc.). Photostat copies and micro-films of a number of early and rare works have been bought through grants from the Smith Research Fund; the Library is continuing to add to the Hanes collection of rare books and manuscripts; and the files of English journals are maintained. Through cooperative arrangements students have ready access to the collections in the library of Duke University.

Requirements for Advanced Degrees

Candidates for advanced degrees in the Department of English must have completed, before admission to candidacy, the undergraduate major in English at the University of North Carolina, or its equivalent.

The courses elected by a candidate for the master's degree must include English 331, one course in Chaucer, one course in drama before 1800 (including Shakespeare), and two

* Absent on leave, fall and winter quarters, 1939-1940.

period courses. All the courses may be chosen from the Department of English; or a minor may be chosen from some other department in the Division of the Humanities, or, in special cases, from a department in some other division. The plan of work as a whole must be closely unified, and no department may be chosen as a minor unless the candidate has previously completed, as an undergraduate, an amount of work in that department sufficient to constitute an undergraduate minor.

Since a reading knowledge of two modern foreign languages (usually French and German) is regarded as essential for research, candidates for the degree of Doctor of Philosophy are urged to be prepared to pass the required examinations in these languages at the beginning of their course of study. A reading knowledge of Latin also is desirable.

The candidate for the degree of Doctor of Philosophy should normally be ready after two years of graduate study to devote his major attention to the fields or periods most nearly related to his thesis.

Courses for Graduates and Advanced Undergraduates

101. OLD ENGLISH GRAMMAR AND READINGS (5).

Selections for translation from Early and Late West Saxon prose and from Old English poetry. Drill in the principles of English philology. Old English in relation to the other Germanic languages. *Five hours a week, fall quarter.* Professor Ericson.

105. MEDIEVAL ROMANCE IN ENGLISH (5).

A survey of medieval romance and romance materials in English literature, with particular attention to the Arthurian tradition. *Five hours a week, spring quarter.* Professor Thrall.

111. ENGLISH LITERATURE OF THE RENAISSANCE (5).

A survey of the literature of the Elizabethan period, exclusive of the drama. *Five hours a week, fall quarter.* Professor Thrall; 1939: Professor Wells.

112. SPENSER (5).

The works of Spenser are studied in the light of the life, times, and culture of the poet, with some consideration of the problems involved in such a study. *Five hours a week, winter quarter.* Professor Thrall; 1940: Professor Wells.

113. ENGLISH DRAMA, 1500-1600 (5).

English Drama in the Sixteenth Century with preliminary consideration of the religious drama in Western Europe and in Medieval England. *Five hours a week, fall quarter.* Professor Coffman.

114. ENGLISH DRAMA, 1600-1642 (5).

Five hours a week, winter quarter. Professor Sharpe.

121. ENGLISH LITERATURE, 1616-1700 (5).

The non-dramatic literature of the period. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Howell.

125. MILTON (5).

The works of Milton are studied in the light of the life, times, and culture of the poet, with some consideration of the problems involved in such a study. *Five hours a week, fall quarter.* Professor Taylor.

131. ENGLISH LITERATURE, 1700-1780 (5).

The non-dramatic literature of the period. *Five hours a week, fall quarter.* Professor Bond (1940); Professor MacMillan (1941).

133. RESTORATION AND EIGHTEENTH-CENTURY DRAMA (5).

A study of English drama from 1660 to 1780. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor MacMillan.

141. ENGLISH LITERATURE, 1780-1830 (5).

A survey of English literature of the romantic period with especial attention to the greater poets. *Five hours a week, winter quarter.* Professor Hudson.

148. ENGLISH DRAMA, 1780-1880 (5).

Romantic and Victorian drama studied in the light of theatrical and social conditions and with attention to Continental influences. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor MacMillan.

149. AMERICAN DRAMA, 1890-1930 (5).

A brief survey of the nineteenth-century English and American drama, and a study of the development of the American drama in the twentieth century through representative plays. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Koch.

151. EARLY AMERICAN LITERATURE (5).

A survey of the literature of the colonial, revolutionary, and early national periods, including Bryant, Irving, and Cooper. *Five hours a week, fall quarter.* Professor Paine.

161. COMPARATIVE DRAMA (5).

A general survey of the drama and the theatre from Æschylus to Ibsen. The development of dramatic literature is studied through representative plays (in translation) of the leading European dramatists. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Koch.

162. MODERN DRAMA (5).

A study of representative plays of recent times, beginning with Ibsen. Special attention is given to the function of the drama in interpreting modern thought and changing social conditions. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Koch.

163. LITERARY CRITICISM (5).

The principles which have animated classical, romantic, and realistic literature. *Five hours a week, winter quarter.* Professor Bond.

167. THE ENGLISH BALLAD (5).

A study of the English and Scottish popular ballads, with a survey of ballad survivals in America, particularly in North Carolina. Students in the course who may have access to ballads in oral circulation will be encouraged to collect them. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Hudson.

Courses for Graduates

201. STUDIES IN OLD ENGLISH LITERATURE: BEOWULF (5). Prerequisite, English 101.

Five hours a week, winter quarter. Professor Ericson.

202. MIDDLE ENGLISH (5).

The main purpose of the course is to acquaint the student with the literature of the period through relation to the social, political, and religious background. *Five hours a week, winter quarter.* Professor Coffman.

204. HISTORY OF THE ENGLISH LANGUAGE (5). Prerequisite, English 101, 202.

An intensive and detailed study of the language according to historical methods. General Indo-European phenomena as applied to English. Special attention to English dialects and the development of Standard Literary English in the Middle English period. For students of linguistics and others wishing a thorough background for literary studies in the English classics. *Five hours a week, spring quarter.* Professor Ericson.

208. CHAUCER (5).

The work of the course will consist chiefly of a reading and discussion of Chaucer's works, with attention to the critical and historical problems involved in their interpretation, and with some consideration of Chaucer's language. Previous training in Old or Middle English is not prerequisite. *Five hours a week, spring quarter.* Professor Coffman.

231-232. SHAKESPEARE (10).

The works of Shakespeare are studied with emphasis upon the historical and critical problems which they present. *Five hours a week, winter and spring quarters.* Professor Taylor.

243. VICTORIAN LITERATURE, 1832-1890, I (5).

A study of one of the two main literary currents of the Victorian period—the usage of Classical, Medieval, and Renaissance sources by Tennyson, Browning, Arnold, Morris, and Swinburne. Not prerequisite to English 244. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Booker.

244. VICTORIAN LITERATURE, 1832-1890, II (5).

A study of one of the two main literary currents of the Victorian period—the social and religious literature of Carlyle, Dickens and

the humanitarian novelists, Tennyson, Browning, Ruskin, Arnold, Morris, and Swinburne. Not prerequisite to English 243. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Booker.

283. AMERICAN LITERATURE, 1830-1855 (5).

This survey course follows English 151, which is not, however, prerequisite. The chief authors studied are Poe, Emerson, Thoreau, Longfellow, Lowell, and Hawthorne. Especial attention is given to the literature of the South. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Adams.

284. AMERICAN LATERATURE, 1855-1900 (5).

This survey course follows English 283, which is not, however, prerequisite. The chief authors studied are Melville, Lanier, Whitman, Mark Twain, Bret Harte, Howells, and James. Stress is placed upon the cultured and folk literature of the South, the influence of Whitman upon poetry. the rise of realism, literary criticism, and the dominance of magazines. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Paine.

307. SEMINAR: STUDIES IN MEDIEVAL LITERATURE (5).

Research in special problems concerning various aspects of the vernacular literature of the middle ages. (Not offered 1940-1941.) *Five hours a week, winter quarter.* Professor Coffman.

310. SEMINAR: STUDIES IN ELIZABETHAN LITERATURE (5).

Research in special problems in Elizabethan literature. *Five hours a week, spring quarter.* Professor Taylor.

312. SEMINAR: STUDIES IN SEVENTEENTH-CENTURY LITERATURE (5).

Research in special problems in the literature and thought of the seventeenth century. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Howell.

313. SEMINAR: STUDIES IN EIGHTEENTH-CENTURY LITERATURE (5).

Special problems in the literary and intellectual movements of the eighteenth century. *Five hours a week, spring quarter.* Professor Bond (1941); Professor MacMillan (1942).

317. SEMINAR: STUDIES IN NINETEENTH-CENTURY ROMANTICISM IN ENGLAND (5).

The seminar is given in two divisions in alternate years. In 1941, Wordsworth and Coleridge: the English and Continental aspects of their thought and art. In 1942, Byron and Shelley, second generation leaders of Romantic revolt: English and Continental aspects of their thought and art. *Five hours a week, spring quarter.* Professor Hudson.

318. SEMINAR: STUDIES IN AMERICAN LITERATURE (5). *Five hours a week, winter quarter.* Professor Paine.

320. SEMINAR: STUDIES IN VICTORIAN LITERATURE (5).

Special problems in the literature appearing between 1832 and 1890. *Five hours a week, winter quarter.* Professor Booker.

325. SEMINAR: MODERN DRAMA (5).

Special studies in English or American drama. See Dramatic Art 325. *Five hours a week, fall quarter.* Professors Sharpe, Koch, Selden (of the Department of Dramatic Art).

331. BIBLIOGRAPHY AND METHODOLOGY (5).

A course designed to aid students in preparing term papers, theses, and dissertations. The bibliographical guides for the study of English are presented, the problems of literary research are discussed, and the standard procedures and forms in writing scholarly papers are taught. Required of all candidates for the A.M. and Ph.D. degrees. *Five hours a week, winter quarter.* Professor Paine.

340. SPECIAL READINGS (5).

Research in a special field under the direction of a member of the department. This course may not be repeated for credit.

341. SPECIAL RESEARCH (5).

Research in a special field under the direction of a member of the department.

Attention is called to the courses in philology and advanced literary study offered in the Department of Classics (Latin 202, Latin Epigraphy; Latin 203, Latin Paleography), and General and Comparative Literature, Germanic Languages (Gothic, Old and Middle High German, Old Saxon, Norse, etc.), and Romance Languages (French 221-222-223, Old French; French 225, Provençal; Celtic 105, Old Irish; Spanish 221-222, Old Spanish, Italian 131-132, Dante, etc.).

See also the Department of Comparative Linguistics.

CURRICULUM IN FOLKLORE

Administrative Committee: The Dean (Chairman), Professors Boggs (Secretary), Holmes, Hudson, Jente, Johnson, Schinhan.

This curriculum assembles the facilities of the University for those who desire a major or minor for the master's degree or a doctoral minor in Folklore. The effort is to mobilize the pertinent graduate instruction in this field now being offered in such departments as English, Germanic Languages, Music, Romance Languages, and Sociology. Students having had an undergraduate major in any one of these departments and having had the prerequisite courses are eligible to take work in this curriculum with a view to becoming candidates for higher degrees.

The Folklore Council of the University brings together people who have interests in different phases of the folklore field, encourages the coordination of their research, and stimulates various kinds of extracurricular activities in the field. The Council (see the General Catalogue of the University) and the Curriculum in Folklore supplement one another.

The resources of the University Library are adequate for the work offered in this curriculum. The Library contains nearly a thousand volumes directly pertaining to the various branches of the field, supplemented by many times this number of necessary auxiliary volumes in related fields. These resources are naturally strongest in folklore of the United States, especially of the Southern region. Available are such large sets as the publications and journal of the London Folklore Society and the memoirs and journal of the American Folklore Society.

The specialized research interests of the faculty indicate the lines along which students may pursue their research training most advantageously: the proverb, the ballad, folk music, the folktale, folklore of the Southern Negro, Latin American folklore, and folklore in medieval Celtic, French, and Spanish literatures. Phonographic recording apparatus is available on the campus, and the Southern region is one of the richest sections of the nation for the collection of folklore materials.

The auxiliary function of work in folklore coordinated with work in related departments of the University has resulted in theses, such as a study of the Folklore in the plays of Lady Gregory and of proverbs in the Spanish Golden Age drama, as well as a classification of folk narrative motives in the Old French fabliaux.

Courses for Graduates and Advanced Undergraduates

105. (Romance Languages—French 105) OLD IRISH (5).
Grammar and reading of texts. Pokorny's *Old Irish Reader, Táin Bó Cūailnge* (supplement to *Eriu*). *Five hours a week, winter quarter.* Professor Holmes.

151. (Sociology 151) SOCIAL ANTHROPOLOGY (5). Prerequisite, Sociology 51-52.
A general course in social anthropology, but with some attention to physical anthropology and archaeology. The nature of culture; culture processes; the modern cultural environment; and social change. *Five hours a week, spring quarter.* Professor Johnson.

167. (English 167) THE ENGLISH BALLAD (5).
A study of the English and Scottish popular ballads, with a survey of ballad survivals in America, particularly in North Carolina. Students in the course who may have access to ballads in oral circulation will be encouraged to collect them. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Hudson.

185. (Comparative Literature 185) INTRODUCTION TO FOLKLORE (5).
Origin, evolution, and bibliography of types. Literary significance, as seen in the development of prose fiction. Collections, such as the Panchatantra, Seven Sages, Arabian Nights, etc., and the continuation of these tales through medieval and modern literature. *Five hours a week, fall quarter. (1941 only, winter quarter.)* Professor Boggs.

Courses for Graduates

203. PROVERBIAL SPEECH (5). Prerequisite, Folklore 185.
A study of the origin, development, use, and dissemination of the various aspects of proverbial folk speech and its importance in the life and literature of nations. The basic material will be the proverb and proverbial expression, with emphasis also on the riddle and folk wit and humor. *Five hours a week, spring quarter.* Professor Jente.

204-205-206. (Music 204-205-206) COMPARATIVE MUSICOLOGY (9). Prerequisite, a reading knowledge of one or more foreign languages, preferably French, German, or Spanish, a working knowledge of the theory and history of music, and the permission of the instructor.
A survey of representative systems of primitive and folk music; discussions of cultural and musical implications; a study of problems and methods of research with exercises in transcription and analysis of records made in the field. *Three hours a week, fall, winter, and spring quarters.* Professor Schinhan.

214. THE FOLK NARRATIVE (5). Prerequisite, Folklore 185.
A study of the origin, development, use, and dissemination of the various aspects of the folk narrative and its importance in the life and literature of nations. The basic material will be the folktale, legend, and tradition, with some consideration of other folk and literary types sharing in the common stock of folk motives. *Five hours a week, winter quarter.* Professor Boggs.

395. RESEARCH (5).
Research in a special field under the direction of members of the staff.

DEPARTMENT OF GENERAL AND COMPARATIVE LITERATURE

HOWARD RUSSELL HUSE, acting chairman, and the graduate staff of the Departments of Classical Languages, English, Romance Languages, and Germanic Languages.

The Department of General and Comparative Literature has a specific function in relation to graduate studies. It offers students an opportunity to become familiar with the work of the leading figures of world literature and to gain in this way a knowledge which is basic for literary studies and for the humanities in general. It provides, moreover, in the case of certain graduate courses, a strictly comparative study of literary forms and movements.

Courses for Graduates and Advanced Undergraduates

103. GREEK AND ROMAN EPIC (5).

Homer's Iliad and Odyssey, Virgil's Aeneid, and the minor Greek and Roman Epics. The ancient epic forms and characteristics will be studied. *Five hours a week, spring quarter.* Professors Epps, Harrer.

107. GREEK DRAMATIC LITERATURE (5).

Extensive reading of the Greek tragedies, with attention to the origin, development and content of Greek drama, and the Greek approach to life as presented in Greek tragedy. *Five hours a week, fall quarter.* Professor Epps.

117. CERVANTES (5).

Consideration of the Romances of Chivalry in Spain; study of Cervantes' *Don Quixote* and the *Exemplary Novels* in English translation. *Five hours a week, spring quarter.* Professor Stoudemire.

125. MILTON (5).

The works of Milton are studied in the light of the life, times, and culture of the poet, with some consideration of the problems involved in such a study. *Five hours a week, fall quarter.* Professor Taylor.

135. FRENCH CLASSICISM (5).

A general survey of the origins of classicism in France. Assigned readings in the Greek and Latin writers with emphasis on the modification of their art which explains the masterpieces of the French 17th century. A large part of the course will be given over to the plays of Corneille, Molière, Racine, and their contemporaries. The decline of classicism in France, and the evolution toward an unrestricted type of literature. *Five hours a week, spring quarter.* Professor Wiley.

137. A BRIEF SURVEY OF GERMAN LITERATURE (5).

The main trends in the development of German literature from its beginnings down to the present time. Lectures and extensive

outside readings in English. The course is especially designed for seniors and graduate students and can not be taken for credit by students whose majors are in German. *Five hours a week, fall quarter.* Professor Friederich.

155. GOETHE (5).

Study of the man, thinker, and poet in connection with the German and general European movements of thought and literature in his time. Lectures and reports. *Five hours a week, spring quarter.* Professor Friederich.

156. DANTE (5).

A study of translations of the *Vita Nuova* and the *Divine Comedy;* the precursors of Dante and the poets of the *dolce stil nuovo.* Special studies of Dante's political and social philosophy, with particular emphasis on Dante as a poet and as a guide. *Five hours a week, winter quarter.* Professor Huse.

161. COMPARATIVE DRAMA (5).

A general survey of the drama and the theatre from Aeschylus to Ibsen. Special attention is given to the function of the drama in representative plays of the leading European dramatists. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Koch.

162. MODERN DRAMA (5).

A study of representative plays of recent times, beginning with Ibsen. Special attention is given to the function of the drama in interpreting modern thought and changing social conditions. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Koch.

163. LITERARY CRITICISM (5).

The principles which have animated classical, romantic, and realistic literature. *Five hours a week, winter quarter.* Professor Bond.

170. THE MIDDLE AGES (5).

A survey of Medieval France, England, Germany, Spain, Italy, and Byzantium, from the point of view of civilization and especially of art and literature. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Holmes.

173. MEDIEVAL ROMANCE (5).

A survey of Medieval romance and romance materials in English literature, with particular attention to the Arthurian tradition. (Same as English 105.) *Five hours a week, spring quarter.* Professor Thrall.

175. THE RENAISSANCE (5).

An account of the establishment of modern European culture. Lectures on the history, science, fine arts, literary scholarship, and literature of the Renaissance in Italy, France, Germany, the Netherlands, and England. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professors Holmes (Chairman), Adams, Lyons, Friederich, Linker.

177. LITERARY INFLUENCES IN FRANCE, GERMANY, AND ENGLAND IN THE EIGHTEENTH CENTURY (5).

The *Querelle des Anciens et des Modernes;* French classicism (Voltaire) in its defense against growing English Pre-romanticism and German *Sturm und Drang.* The influence of Shakespeare and Milton on the continent, and of Rousseau in Germany. *Five hours a week, winter quarter.* Professor Friederich.

185. INTRODUCTION TO FOLKLORE (5).

Origin, revolution, and bibliography of types. Literary significance, as seen in the development of prose fiction. Collections, such as the *Panchatantra, Seven Sages, Arabian Nights,* etc., and the continuation of these tales through medieval and modern literature. *Five hours a week, fall quarter. (1941 only, winter quarter.)* Professor Boggs.

Courses for Graduates

201. PROBLEMS AND METHODS IN COMPARATIVE LITERATURE (5). Prerequisite, good reading knowledge of at least one foreign language.

Purpose and scope of comparative studies since the Renaissance, including a bibliographical survey. *Five hours a week, fall quarter.* Professor Friederich.

204. PHILOSOPHICAL IDEAS IN DRAMATIC LITERATURE (5). Prerequisite, adequate background in Dramatic Literature.

A study of dramatic literature as interpreted from the point of view of social, political, and philosophical theories. *Five hours a week, winter quarter.* Professor Green.

395. RESEARCH (with thesis 5).

Research in a special field under the direction of a member of the department.

DEPARTMENT OF GEOLOGY AND GEOGRAPHY

William Frederick Prouty, *Gerald Raleigh MacCarthy, Professors.
John Warfield Huddle, Samuel Thomas Emory, Associate Professors.
Franklin Carl Erickson, William H. Irwin, Assistant Professors.

To men entering the profession of geology opportunities for useful employment are open in teaching, in state and federal bureaus and surveys, in mining, in investigating oil fields, in working various economic geologic deposits, in geophysical prospecting, and in soil investigation. Preparation for this work may be secured through the regular college course, with geology as the major study throughout the course, and the addition of field work in vacation and work in the Graduate School for one or more years. It may also be obtained through a curriculum leading to the degree of Bachelor of Science in Geology, and this should in every case be followed by work leading to the degree of Master of Science as outlined below.

The work of the graduate student specializing in geology should be, in large measure, the investigation of problems in the field and the working out of many of the details in the laboratory. At the present time the following lines of investigation are being pursued by members of the Department of Geology: origin of "bays" of the Middle Atlantic coastal plain; origin of the phosphate deposits in the Charleston, S. C., area; correlation of the Silurian deposits of Eastern Tennessee; foraminifera of the Coastal plain formations of North Carolina and South Carolina; ostracoda of the Silurian of southeastern United States and the Tertiary of the Coastal Plain of North Carolina; geophysical investigation of character and structure of sub-coastal plain rocks and the structure of the Mississippi Embayment area; resistivity methods in prospecting for water supplies; origin, distribution and economic character of the spodumene deposits of the Gaffney-Kings Mountain Belt; geology of the Buena Vista Quadrangle in Virginia; geology and oil resources of Cass County, Mo.; study of insoluble residues of Knox Dolomite of Eastern Tennessee; geology of dam foundations at Hiwassee and Gilbertsville, Tennessee River; origin of lead and zinc deposits of upper Mississippi valley; conodonts of the black shales of Eastern Tennessee.

* Absent on leave, 1939-1940.

Graduate Degrees in Geology

The course leading to the degree of Master of Science in Geology is open to students who have graduated with the degree of Bachelor of Science in Geology in the University of North Carolina, and to students who have completed the equivalent of such a course as prescribed by the University. The course consists of a special research in some one branch of geology, pursued throughout the year, and six weeks in field work in the summer under the direction of a member of the graduate faculty, followed by the completion of the investigation during the fall term. These researches constitute six full courses for the master's degree. In addition to this major, the candidate must complete three approved courses in one or more of the following departments: chemistry, physics, mathematics, zoology, or botany.

For the degree of Doctor of Philosophy the same procedure is followed, except that after the first year of study less attention is paid to credit gained for courses and more stress is put upon independent work.

Geological Laboratories and Museum

The geological laboratories occupy the New East Building. The laboratories are well supplied with minerals, rocks, thin rock sections, fossils, lantern slides, maps, charts, microscopes, and instruments for advanced work.

The geological museum on the first floor of New East contains large collections of minerals, rocks, and fossils and special exhibits. It is open daily to the public.

Geology: Courses for Graduates and Advanced Undergraduates

101. (43). MINERALOGY (6). Prerequisite, Chemistry 1-2-3 or 4-5.

Elementary crystallography; physical and chemical properties and the classification of minerals; laboratory practice in the identification of important minerals. *Three lecture and six laboratory hours a week, fall quarter. Laboratory fee, $5.00.* Professor Irwin.

102. (133). LITHOLOGY AND THE ELEMENTS OF PETROLOGY (5). Prerequisites, Geology 21-22-23 or 41-42, and 101.

An introductory study of the origin, classification, and distribution of rocks, with special emphasis on the hand specimen identification of common igneous, sedimentary, and metamorphic rock types. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $3.50.* Professor Irwin.

103 (121). FIELD GEOLOGY (5). Prerequisite, Geology 101, 102, Mathematics 41, 51, 52.

A course in geologic field methods with special emphasis on geologic surveying, mapping, note-taking, and field practice. *Three lecture and four laboratory hours a week, spring quarter. Laboratory fee, $3.50.* Professor Prouty.

104, 105, 106 (77, 78, 47). ADVANCED GENERAL GEOLOGY (5 each). Prerequisite, Geology 103, Physics 21-22-23 or 24-25.

A professional course in general geology. The first quarter deals with the physical processes of dynamic geology; the second quarter deals with historical geology from the stratigraphic standpoint; and the third quarter with historical geology from the paleontologic viewpoint. *Three lecture and four laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $3.50 each quarter.* Professors MacCarthy, Huddle.

107 (122). STRUCTURAL GEOLOGY (5). Prerequisite, Geology 103, Physics 21-22-23 or 24-25.

A general course in geologic structure and its relation to exploratory geology. *Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $3.50.* Professor Prouty.

108 (111). ECONOMIC GEOLOGY (5). Prerequisite, Geology 107.

Principles of ore formation, including both metallic and non-metallic minerals. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $3.50.* Professor Prouty.

109 (105). ELEMENTS OF GEOPHYSICS (5). Prerequisite, Geology 107, Mathematics 3, Physics 21-22-23 or 24-25.

The fundamental principles of geophysics and their application to practical problems. *Four lecture and two laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor MacCarthy.

121 (156). GEOMORPHOLOGY (5). Prerequisite, Geology 21-22-23 or 41-42.

Lectures, field work, and laboratory work, dealing in detail with physiographic processes and their results; geomorphology. An extended field study is required in this course. *Five hours a week, lectures and laboratory, spring quarter. Laboratory fee, $2.00.* Professors MacCarthy, Irwin.

128-129 (48-49). SUMMER FIELD COURSE IN GEOLOGY (10). Prerequisite, Geology 101, 102, 103, or special permission.

A six weeks' course to be given in North Carolina and bordering states. This course will coincide with the scheduled six weeks' summer school course. It may also be taken on the transcontinental tour. *Equivalent to five hours a week for two quarters.* Professors Prouty, Huddle.

144-145 (134, 135). PETROGRAPHY (10). Prerequisite, Geology 101, 102.

Introduction to optical mineralogy and the use of the polarizing microscope in the identification of minerals in thin section and crushed fragments; microscopic study of rocks. *Three lecture and four laboratory hours a week, fall and spring quarters. Laboratory fee, $3.50 a quarter.* Professor Irwin.

147 (44). DETERMINATIVE MINERALOGY (5). Prerequisite, Geology 101.

The determination of metallic and non-metallic minerals, chiefly by blowpipe analysis. *Two lecture and six laboratory hours a week, winter quarter. Laboratory fee, $5.00.* Professor Irwin.

161 (45). METEOROLOGY (5).

A study of the atmosphere and the factors controlling the weather; the making and interpretation of weather maps; weather forecasting. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $2.50.* Professors MacCarthy, Erickson.

168-169 (106, 107). FIELD WORK IN GEOPHYSICS (10). Prerequisite, Geology 109, Physics 21-22-23 or 24-25.

Practical application of the magnetometer and of electrical methods to field problems. *Four lecture and two laboratory hours a week, summer session and on application. Laboratory fee, $5.00 a quarter.* Professor MacCarthy.

Geology: Courses for Graduates

221, 222, 223 (141, 142, 143). ADVANCED STRUCTURAL GEOLOGY (5 each). Prerequisite, Geology 104, 105, 106, 107.

A general study of the more important earth structures and a detailed structural study of a number of well-known areas in this and other countries. (1940-1941 and alternate years.) *Five hours a week, fall, winter, and spring quarters. Laboratory fee, $2.50 each quarter.* Professor Prouty.

224, 225, 226 (112, 113, 114). ADVANCED ECONOMIC GEOLOGY (5 each).

A study of the more important metallic and non-metallic mineral deposits of the world, with greater emphasis on those of North America. (1941-1942 and alternate years.) *Four lecture and two laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $2.50 each quarter.* Professor Prouty.

227 (123). OIL GEOLOGY (5). Prerequisite, Geology 104, 105, 107.

A study of the origin, distribution, and accumulation of petroleum, with special relation to the oil fields of North America; methods of prospecting oil, recovery of oil, the valuation of oil properties. *Four lecture and two laboratory hours a week, spring quarter. Laboratory fee, $3.50.* Professor Prouty.

228, 229. ADVANCED FIELD GEOLOGY (10). Prerequisite, Geology 128-129.

Special field problems are worked out under the guidance of the instructor. *Summer quarter.* Professors Prouty, MacCarthy, Huddle, Irwin.

241, 242, 243. ADVANCED MINERALOGY (5 each). Prerequisite, Geology 144-145, except by permission.

Fall quarter: a study of the geometrical form and classification of natural and artificial crystals; crystal drawing; modern developments in the X-ray study of crystalline substances. Winter and spring quarters: a study of an assigned crystallized substance, either natural or artificial, with the view of (1) determining and correlating its optical, crystallographic, and chemical properties or (2) developing and perfecting mineralogical technique. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $3.50 each quarter.* Professor Irwin.

244, 245, 246. ADVANCED PETROLOGY (5 each). Prerequisite, Geology 144, 145.

A study of the microscopic structure, mineral composition, and genetic relations of the igneous, sedimentary, and metamorphic rocks; criteria by which rock types and processes are recognized. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $3.50 each quarter.* Professor Irwin.

261, 262, 263. APPLIED GEOPHYSICS (5 each). Prerequisite, Mathematics through Calculus, Geology 109.

A survey of geophysical methods used for the detection of ore deposits, oil, etc.; a description of geophysical instruments and their use; actual geophysical surveys of selected areas about Chapel Hill. *Three lecture and four laboratory hours a week, fall, winter, and spring quarters.* Professor MacCarthy.

264. THE PHYSICS OF THE EARTH: GEODYNAMICS (5). Prerequisite, Geology 104, 105, 106.

A study of such fundamental problems as the origin of the earth, tides, orogeny, magnetic cycles, continental drift, isostasy, the state of the earth's interior, geochronology. *Five hours a week, fall quarter.* Professor MacCarthy.

281, 282, 283. STRATIGRAPHY OF NORTH AMERICA (5 each). Prerequisite, Geology 104-105-106.

The first quarter deals with principles of stratigraphy and Pre-Cambrian stratigraphy; this is followed by Paleozoic, Mesozoic, and Cenozoic stratigraphy in the second and third quarters. (1940-1941 and alternate years.) *Five hours a week, fall, winter, and spring quarters.* Professor Huddle.

284. PRINCIPLES OF PALEONTOLOGY (5). Prerequisite, Zoology 41 or Botany 41, Geology 106.

A graduate course in evolution and taxonomic procedure. *Five hours a week, fall quarter.* (1941-1942 and alternate years.) *Laboratory fee, $3.50.* Professor Huddle.

285, 286 (172, 173). ADVANCED PALEONTOLOGY (5 each). Prerequisite, Geology 284.

Intensive work on a particular phylum or class. *Two lecture and six laboratory hours a week, winter and spring quarters.* (1941-1942 and alternate years.) Professor Huddle.

287 (174). FORAMINIFERA (5). Prerequisite, Geology 106.

A study of the classification and use of foraminifera as index fossils. *Two lecture and six laboratory hours a week, one quarter, on application.* Professor Huddle.

288, 289 (175, 176). MICROPALEONTOLOGY (5 each). Prerequisite, Geology 287.

Advanced work in micropaleontology. *Two lecture and six laboratory hours a week, each quarter, on application.* Professor Huddle.

RESEARCH COURSES

These courses are intended for applicants for advanced degrees. Laboratory work and conferences with the Professor in charge of the work. Work in each of these courses may be continued under the same number with sub-letter designations.

321. RESEARCH IN STRUCTURAL GEOLOGY (5 or more). *On application.* Professor Prouty.

329. RESEARCH IN ECONOMIC GEOLOGY (5). *On application.* Professor Prouty.

341. RESEARCH IN MINERALOGY (5 or more). *On application.* Professor Irwin.

349. RESEARCH IN PETROLOGY (5 or more). *On application.* Professor Irwin.

361. RESEARCH IN GEOPHYSICS (5 or more). *On application.* Professor MacCarthy.

381. RESEARCH IN STRATIGRAPHY (5 or more). *On application.* Professor Huddle.

389. RESEARCH IN PALEONTOLOGY (5 or more). *On application.* Professor Huddle.

Geography: Courses for Graduates and Advanced Undergraduates

117. SOILS (5).

A general study of the origin of soil material, the factors affecting soil formation and the nature, classification, and distribution of soils. Field trips will be conducted to study the distribution and types of soil in North Carolina. *Five hours a week, winter quarter. Laboratory fee, $2.50.* Professor Erickson.

118. SOIL EROSION AND LAND-UTILIZATION MAPPING (5). Prerequisite, Geography 117.

The first half of the course will deal with soil erosion and methods of controlling erosion. The second half will be devoted to mapping land-utilization and studying the utilization of various soil types. *Five hours a week, spring quarter. Laboratory fee, $2.50.* Professor Erickson.

153 (53). POLITICAL GEOGRAPHY (5). Prerequisite, Geography 31-32-33.

The course deals with geographic factors affecting international relations. *Five hours a week, fall quarter. Laboratory fee, $2.50.* Professors Emory, Erickson.

154 (60). GEOGRAPHICAL INFLUENCES IN AMERICAN HISTORY (5). Prerequisite, Geography 31-32-33.

A chronological study of the influence of geographical factors on the development of North America, with particular emphasis on the United States. *Five hours a week, spring quarter.* Professor Emory.

155. CLIMATOLOGY (5). Prerequisite, Geography 31-32-33.

A course dealing with the essential facts of weather and climate, the climatic regions of the earth, world distribution of temperature, winds, and precipitation. Various classifications of climates will be presented with the purpose of giving a better understanding of the climatic factor in man's environment. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Erickson.

156. CONSERVATION OF NATURAL RESOURCES (5). Prerequisite, Geography 31-32-33 or Geology 21-22-23.

A general study of natural resources, including soils, forests, water supply, minerals and metals; waste of natural resources, and methods of resource conservation; and problems involved in the establishment of policies of conservation. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Erickson.

157 (57). GEOGRAPHY OF NORTH AMERICA (5). Prerequisite, Geography 31-32-33.

This course deals with the physical features, soils, minerals, climatic resources, and transportation facilities of North America. *Five hours a week, reading and reports, winter quarter.* Professors Emory, Erickson.

158 (58). GEOGRAPHY OF EUROPE (5). Prerequisite, Geography 31-32-33.

A study of the physical, economic, political, and social conditions of Europe. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Erickson.

159 (59). GEOGRAPHY OF SOUTH AMERICA (5). Prerequisite, Geography 31-32-33.

A study of the physical, economic, and social conditions of South America, showing the present and future possibilities of the various regions and countries. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Erickson.

178, 179. FIELD COURSE IN GEOGRAPHY. Prerequisite, Geography 31-32-33, Geology 21-22-23, or 41-42.

Regional field study in Southern Appalachians. For information on this work the interested student should consult the department.

Geography: Courses for Graduates

211 (141). SPECIAL WORK IN GEOGRAPHY (5 or more). Prerequisite, Geography 31-32-33 and two courses in the 100-bracket.

Special problems in Geography, adapted to the needs of individual students. *Five hours a week, fall, winter, and spring quarters.* Professors Erickson and Emory.

311. RESEARCH IN GEOGRAPHY (5 or more).

On application. Professors Emory and Erickson.

DEPARTMENT OF GERMANIC LANGUAGES

Richard Jente, Kent James Brown, Professors.
George Sherman Lane, Associate Professor.
Werner Paul Friederich, Frederick Edward Coenen, Assistant Professors.

The courses for advanced undergraduates and graduates offered by the Department of Germanic Languages are designed to meet the needs of three classes of students: those whose interest in language and literature prompts them to pursue their studies in German beyond the undergraduate stage; those who are preparing to teach in schools and private academies; and those who intend to adopt the study of Germanic languages as a profession.

For all of these classes the department offers courses covering different periods of the language and literature. The linguistic courses are intended primarily for those who will specialize in Germanic languages.

The department is laying the foundation for a library adequate for research in special fields, notably at present for problems relating to Goethe, for the dramatic works of Kleist, Grillparzer, and Hebbel, for the history of the German novel, and for the development of the theater. Special effort and expense have been applied to develop library facilities in the field of Germanic linguistics and the historical study of the German language. Full sets of leading journals and the fundamental reference works make possible specialization in both language and literature.

Doctoral dissertations in progress at present are: "Goethe's Crticism of the Literary Men of his Day;" "Recurring Types of Character, Situation, and Treatment in the German Drama of Naturalism."

Requirements for Candidates for Advanced Degrees

In case the preparation of a candidate is not adequate in the judgment of the department, the right is reserved to require him to supplement this training by preparatory courses.

All candidates should have a command of spoken German, and candidates for the doctor's degree are expected to have had some residence in Germany.

Candidates for the master's degree should have, in addition to their special work, a general acquaintance with the history of the German language and literature. Of candidates

for the doctor's degree there will be expected a more detailed acquaintance with the history of the language and literature, in addition to the special investigation of some particular period.

Candidates for the master's degree or the doctor's degree may take both the major and minor in the Department of Germanic Languages, with either German literature as a major and Germanic linguistics as a minor, or vice-versa. If the minor is taken in some other department, it must have definite relation to the major field.

Courses for Graduates and Advanced Undergraduates

101-102-103. WRITING AND SPEAKING GERMAN; PHONETICS (9). Prerequisite, German 23, or by special permission.

Three hours a week, through the year. Professor Coenen.

109. GERMAN PROSE IN THE NINETEENTH CENTURY (5). Prerequisite, German 23.

Five hours a week, winter quarter. Professor Coenen.

111. GERMAN DRAMA IN THE NINETEENTH CENTURY (5). Prerequisite, German 23.

Kleist, Grillparzer, Hebbel, Ludwig, Hauptman. Readings, lectures, reports. *Five hours a week, spring quarter.* Professor Brown.

115. THE GERMAN LYRIC FROM GOETHE TO THE PRESENT (5). Prerequisite, German 23.

Five hours a week, fall quarter. Professor Jente.

121-122. GOETHE (10). Prerequisite, German 23.

Study of his life. Reading and interpretation of representative works. Lectures and reports. *Five hours a week, fall and winter quarters.* Professor Brown.

123. FAUST (5). Prerequisite, German 23.

Goethe: *Faust,* Parts I and II. *Five hours a week, spring quarter.* Professor Brown.

131. LESSING AND HIS TIME (5). Prerequisite, German 23.

New trends in German literature from 1700 to 1780. French and English influences. Wieland, Klopstock, Herder. *Five hours a week, spring quarter.* Professor Friederich.

141. SCHILLER (5). Prerequisite, German 23.

Study of Schiller's life and works with emphasis on his historical dramas. Lectures, translation, and reports. *Five hours a week, spring quarter.* Professor Jente.

151. CONTEMPORARY GERMAN LITERATURE (1885-1930) (5). Prerequisite, German 23.

A study of German literature from Naturalism to recent times. Lectures, readings, and reports. *Five hours a week, winter quarter.* Professor Jente.

155. GOETHE IN ENGLISH TRANSLATION. (For description see General and Comparative Literature 155).

Five hours a week, spring quarter. Professor Friederich.

161. HISTORY OF THE GERMAN LANGUAGE (5). Prerequisite, a good reading knowledge of German.

Five hours a week, fall quarter. Professor Lane.

171. GERMAN CIVILIZATION (5). Prerequisite, German 101-102-103.

Lectures on German geography, history, institutions, art, music, and customs. All lectures, discussions, and reports are in German. *Five hours a week, winter quarter.* Professor Friederich.

Courses for Graduates

221. GOTHIC (5).

Five hours a week, fall quarter. Professor Lane.

222. OLD HIGH GERMAN GRAMMAR (5).

Five hours a week, winter quarter. Professor Lane.

223. COMPARATIVE GERMANIC GRAMMAR (5).

Five hours a week, spring quarter. Professor Lane.

232. OLD SAXON (5).

Five hours a week, winter quarter. Professor Lane.

233. OLD NORSE (5).

Five hours a week, spring quarter. Professor Lane.

235-236. MIDDLE HIGH GERMAN LITERATURE (10).

Rapid reading of Middle High German lyrics and epics. *Five hours a week, winter and spring quarters.* Professor Jente.

240. READING COURSE (9).

Designed to give graduate students the background of a survey of German literature. Extensive outside reading. Reports and short connecting lectures. *One hour a week, through the year.* Professor Friederich.

241. THE ROMANTIC SCHOOL IN GERMANY (5).

Five hours a week, spring quarter. Professor Brown.

252, 253. LATE MEDIEVAL RENAISSANCE AND BAROQUE LITERATURE IN GERMANY (10).

German literature and its cultural background from 1400 to 1700. Extensive outside reading and reports. (1940-1941 and alternate years.) *Five hours a week, fall and winter quarters.* Professor Friederich.

341-342-343. SEMINAR IN LITERATURE (9).

Three hours a week, through the year. Professors Brown and Jente.

361-362-363. SEMINAR IN LINGUISTICS (9).

The subject matter will be determined by the needs of the students. *Five hours a week, through the year.* Professor Lane.

395. RESEARCH (5).

Research in a special field under the direction of a member of the department.

DEPARTMENT OF HISTORY

Albert Ray Newsome, Henry McGilbert Wagstaff, William Whatley Pierson, Mitchell Bennett Garrett, Wallace Everett Caldwell, Loren Cary MacKinney, Hugh Talmadge Lefler, *Fletcher Melvin Green, **Howard Kennedy Beale, ***J. G. deR. Hamilton, Professors.

Josiah Cox Russell, Associate Professor.

Cecil Johnson, Carl Hamilton Pegg, Assistant Professors.

George Edwin Mowry, Instructor.

The Department of History has been particularly interested for many years in North Carolina, Southern, American, and Hispanic-American history, and has published many books and monographs. Advanced courses and research guidance and facilities are available not only in these fields but also in ancient, medieval, modern European, and English history.

Library and Research Facilities

The department, by reason of its personnel and the rich store of manuscripts and books in the University Library and other convenient research centers, is especially well prepared to offer graduate work in American, Southern, and North Carolina history.

The Library has been able in recent years through endowments, gifts, and the full-time activities of a director and collector to assemble from the entire South a collection of Southern historical manuscripts, pamphlets, and books which offers opportunities for graduate study in the history of that region. The collection is growing rapidly and already is one of the most important in the United States.

The North Carolina collection of books, pamphlets, manuscripts and newspapers is the largest existing body of assembled source material relating to the history of the State. It contains the Dr. Stephen B. Weeks collection of more than 10,000 items, and many items and collections obtained through the North Carolina Historical Society, the Kenan Fund for the acquisition of Civil War materials, and the generosity of Mr. John Sprunt Hill of Durham and others. In the Kidder, Clark, Bridgers, and Howard collections, the Library has a noteworthy group of newspaper materials.

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* Absent on leave, fall quarter, 1939.
** Absent on leave, spring quarter, 1940.
*** Kenan Professor and Director of the Southern Historical Collection.

The Peabody collection provides a basis for the study of international law and diplomacy; and recent accessions have been made in English and Hispanic-American history, including, respectively, an incomplete set of Hansard reports and important groups of books, documents and pamphlets.

The University is conveniently located with reference to other research centers, especially the North Carolina Historical Commission and the State Library in Raleigh and Duke University in Durham, which have large collections of manuscript and printed sources for North Carolina and Southern History. Research facilities are greatly extended by copies of the Library of Congress and Duke University catalogues in the University Library.

Publications

Under the direction of the departments involved, there is published the *James Sprunt Studies in History and Political Science*. Established by the late Dr. James Sprunt, of Wilmington, N. C., the publication has at present twenty-three volumes. The contents, it may be noted, have in the main been relative to North Carolina state and colonial history and government, but by recent action the publication has been enlarged to embrace general history and political science. Its pages have been open to students, as well as to specialists.

Graduate Degrees in History

For the degree of Master of Arts in history the student may have his major or minor in either European or American history and must secure the approval of the departmental graduate committee for his program of courses. History 201 or its equivalent and at least one full course in a seminar shall be required of all candidates for the degree.

For the degree of Doctor of Philosophy in history, each student shall select one of the following divisions of history as the subject of his major interest and study and shall write his dissertation in some field thereof: (1) Ancient and Medieval History; (2) Modern European History; (3) English History with related work in European History; (4) United States History; (5) Hispanic-American History with related work in United States History. He shall be held for further knowledge of a field of history outside his major division and also a field in a related subject such as economics, political science, classics, literature, philosophy, sociology. The limits of these fields shall be determined by the departmental graduate committee in accordance with the interests and needs of the student. Six of the courses taken in these two fields shall constitute the student's minor.

Courses for Graduates and Advanced Undergraduates

121. MEDIEVAL CIVILIZATION (5).

An intensive study of the classical cultural heritage and of the evolution of culture during the Middle Ages. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor MacKinney.

122. SOCIAL-ECONOMIC HISTORY OF THE MIDDLE AGES (5).

An intensive study of the social and economic life of the Middle Ages. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor MacKinney.

123. SPANISH CIVILIZATION (5).

The background and rise of medieval Spanish civilization; its climax in the age of Ferdinand, Isabella, Charles I, and Philip II; modern Spanish nationalism and radicalism. *Five hours a week, spring quarter.* Professor MacKinney.

124. THE AGE OF THE RENAISSANCE (5).

The evolution of modern civilization in Italy and the transalpine countries; the blending of medieval and classical elements; the political and economic background; the rise of vernacular literatures; the arts; literature; humanism; education; discovery and invention. *Five hours a week, winter quarter.* Professor MacKinney.

131. THE PROTESTANT REVOLT (5).

Europe in the Sixteenth Century. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Garrett.

132. THE RISE OF ABSOLUTISM IN EUROPE (5).

Europe in the Seventeenth Century. *Five hours a week, winter quarter.* Professor Garrett.

133. FRENCH REVOLUTION AND NAPOLEON (5).

An intensive study of the French Revolution and the Empire. *Five hours a week, spring quarter.* Professor Garrett.

134. RISE OF DEMOCRACY AND NATIONALISM IN MODERN EUROPE (5).

Europe from 1815 to 1870. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Garrett.

135. THE WORLD WAR (5).

Background, immediate causes, military events, and peace conditions. *Five hours a week, winter quarter.* Professor Garrett.

136. RECENT AND CONTEMPORARY EUROPEAN HISTORY (5).

The aftermath of the World War. *Five hours a week, spring quarter.* Professor Pegg.

137. ENGLAND TO 1603 (5).

The development of English society based upon an intensive study of the sources and literature of selected topics. Emphasis will be upon social and political history in 1940 and upon intellectual history in 1941. *Five hours a week, spring quarter.* Professor Russell.

138. ENGLAND FROM 1603 TO 1760 (5).

The national development and expansion of the British state during the period covered. *Five hours a week, fall quarter.* Professor Wagstaff.

139. GREAT BRITAIN FROM 1760 TO THE PRESENT (5).

Evolution of the British state as shaped by modern forces. *Five hours a week, winter quarter.* Professor Wagstaff.

143. THE DIPLOMATIC HISTORY OF THE UNITED STATES (5).

A course designed to present the experiences of the United States in its relations with other nations from independence to the present time. *Five hours a week, winter quarter.* Professor Johnson.

145. AMERICAN CULTURAL HISTORY, 1607-1860 (5).

The course will deal with cultural trends, the early development of significant American ideas and social attitudes, and the growth of national characteristics, and the relation of these to the social and economic background in which they grew. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Beale.

146. AMERICAN CULTURAL HISTORY, 1860-1939 (5).

The course will deal with the historical background of contemporary American culture, ideas, social attitudes, and national characteristics, with emphasis upon the contributions of such groups as Negroes, foreigners, and women, migration of ideas, and the influence of industrialism, of science, of religion, and of the ideals of progress, individualism, and social responsibility. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Beale.

149. THE AMERICAN COLONIES, 1606-1689 (5).

A survey of European backgrounds; and a study of the founding and development of England's American colonies and their relations to each other and to the British Empire. *Five hours a week, fall quarter.* Professor Lefler.

150. THE AMERICAN COLONIES, 1689-1783 (5).

A study of the political, social, economic, and cultural history of the colonies from 1689 through the American Revolution. *Five hours a week, winter quarter.* Professor Lefler.

151. THE FEDERAL PERIOD, 1783-1815 (5).

A study of the Articles of Confederation, the formation and adoption of the Federal Constitution, the launching of the government, Jeffersonian democracy, and the Second War for American Independence. *Five hours a week, fall quarter.* Professor Newsome.

152. THE ANTE-BELLUM PERIOD, 1815-1860 (5).

A study of the westward movement, Jacksonian democracy, nationalism and expansion, state rights and sectionalism, controversy over negro slavery, and causes of the war for Southern Independence. *Five hours a week, spring quarter.* Professor Newsome.

154. CIVIL WAR AND RECONSTRUCTION (5).

The important constitutional, political, economic, and social problems of the Civil War and Reconstruction periods in the South, in the North, and in the nation. *Five hours a week, fall quarter.* Professor Beale.

155. RECENT AMERICAN HISTORY, 1877-1901 (5).

A study of the transformation of America from a rural society "isolated" from world affairs into a highly industrialized world power with emphasis on the economic, social, constitutional, ideological, and cultural changes that caused or grew out of this transition. *Five hours a week, winter quarter.* Professor Beale.

156. RECENT AMERICAN HISTORY, 1901-1939 (5).

The course deals with the political, constitutional, economic, social, and intellectual problems of the newly industrialized nation and with the history of the foreign relations of the United States as a world power. *Five hours a week, spring quarter.* Professor Beale.

161. NORTH CAROLINA, 1584-1815 (5).

A survey of the political, social, economic, and cultural development of North Carolina from the first settlement until 1815. *Five hours a week, fall quarter.* Professor Lefler.

162. NORTH CAROLINA, 1815-1939 (5).

A survey of political, economic, social, and cultural development in North Carolina since 1815. *Five hours a week, winter quarter.* Professor Newsome.

163. THE OLD SOUTH (5).

A study of the colonial background, political life, and economic, social, and cultural development of the Southern States prior to 1860. *Five hours a week, fall quarter.* Professor Green.

164. THE SOUTH SINCE THE CIVIL WAR (5).

The course deals with the political, economic, social, and intellectual development of the South since the Civil War. *Five hours a week, winter quarter.* Professor Green.

165. HISTORY OF THE WEST I (5).

A study of the westward movement and of frontier civilization in the area now comprising the United States from the time of exploration and settlement to 1815. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Newsome.

166. HISTORY OF THE WEST II (5).

A study of the westward movement and of frontier civilization in the United States from 1815 to the opening of the twentieth century. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Newsome.

167. ECONOMIC HISTORY OF THE UNITED STATES, 1783-1860 (5).

A study of agriculture, transportation, commerce, manufacturing, and similar aspects of American history, 1783-1860, and of the influence of economic factors upon social and political life. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Lefler.

168. ECONOMIC HISTORY OF THE UNITED STATES, 1860-1925 (5).

A particular effort will be made to show the effects upon American life of the great economic revolution which has occurred since the Civil War. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Lefler.

170. SOCIAL AND EDUCATIONAL HISTORY OF THE UNITED STATES (Education 143) (5).

A study of the evolution of the social and educational institutions and practices in the United States. *Five hours a week, fall quarter.* Professor Knight.

Courses for Graduates

201ab. HISTORIOGRAPHY (6).

Lectures, conferences, readings, reports. The first quarter will be concerned with methods of research, schools of interpretation, and the interrelation of history with the other social sciences. The second quarter will be a seminar in the history and bibliography of history. Required of all graduate students in history. *Three hours a week, fall and winter quarters.* Professors Caldwell, Newsome.

206. GREEK HISTORY, 500-146 B.C. (5).

A critical study of the sources, literature, and problems of Greek history in the classical and Hellenic periods. *Five hours a week, fall quarter.* Professor Caldwell.

207. ROMAN HISTORY, 133-31 B.C. (5).

A critical study of the sources, literature, and problems of the period of the Roman Revolution. *Five hours a week, winter quarter.* Professor Caldwell.

208. ROMAN HISTORY, 31 B.C.-180 A.D. (5).

A critical study of the sources, literature, and problems of the Age of Augustus and the Great Age of the Roman Empire. *Five hours a week, spring quarter.* Professor Caldwell.

220. PRELIMINARIES OF THE AMERICAN REVOLUTION (5).

A study of the background and causes of the American Revolution. Lectures and reports. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor .....

221. THE WAR OF AMERICAN INDEPENDENCE (5).

A study of its political, social, and economic aspects. Lectures, readings, reports. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor .....

261. STUDIES IN THE SOUTH, 1820-1865 (5).

An intensive study of the social life, economic organization, cultural development, and political system which tended to develop a distinctive Southern nationalism. *Five hours a week, spring quarter.* Professor Green.

271. HISPANIC-AMERICAN HISTORY: The Colonial Period and the Wars of Independence (5).

A study of the transplantation of Hispanic civilization in language, customs, religion, trade, and political institutions; Indian relations, labor and social conditions; education and industry; the causes and events of the struggles for independence. (1941-1942 and every third year.) *Five hours a week, winter quarter.* Professor Pierson.

272. HISPANIC-AMERICAN HISTORY: Development of Nationality in South America (5).

The modern history of Argentina, Brazil, Chile, Uruguay, Paraguay, Peru, Bolivia, and Ecuador. Attention will be directed to the evolution of their political theory; the struggle for political stability, the exploitation of resources, the diplomatic and commercial relations with the United States and Europe, the international problems of South America, the contemporary progress in politics and society. (1943-1944 and every third year.) *Five hours a week, winter quarter.* Professor Pierson.

273. HISPANIC-AMERICAN HISTORY: Hispanic North America and the Caribbean Countries (5).

Emphasis in this course will be placed upon the same general factors as in History 272. Lectures, readings. (1942-1943 and every third year.) *Five hours a week, winter quarter.* Professor Pierson.

301abc. ANCIENT HISTORY (9).

A seminar in some phase of ancient history. *Conference, one hour a week, fall, winter, and spring quarters.* Professor Caldwell.

311abc. MEDIEVAL HISTORY (9).

A seminar in some phase of medieval social history. *Conference, one hour a week, fall, winter, and spring quarters.* Professor MacKinney.

321abc. MODERN EUROPEAN HISTORY (9).

A seminar in some phase of the French Revolution. *Conference, two hours a week, fall, winter, and spring quarters.* Professor Garrett.

323abc. ENGLISH HISTORY (9).

A seminar in some selected phase. *Conference and reports, one hour a week, fall, winter, and spring quarters.* Professor Wagstaff.

331abc. AMERICAN COLONIAL HISTORY (9).

A seminar in some selected phase of the period. *Conference, one hour a week, fall, winter, and spring quarters.* Professor Lefler.

333abc. HISTORY OF THE UNITED STATES, 1783-1860 (9).

A seminar in some phase of the history of the United States, 1783-1860. *Conference, one hour a week, fall, winter, and spring quarters.* Professor Newsome.

335abc. HISTORY OF THE SOUTH (9).

A seminar in some phase of the history of the South. *Conference, one hour a week, fall, winter, and spring quarters.* Professor Green.

337abc. RECENT HISTORY OF THE UNITED STATES (9).

A seminar in some phase of the history of the United States since 1876. *Conference, one hour a week, fall, winter, and spring quarters.* Professor Beale.

341. SEMINAR COURSE (5).

A research course in a special field under the direction of a member of the department.

370abc. HISPANIC-AMERICAN HISTORY (9).

A seminar in some selected phase. *Conference and reports, one hour a week, fall, winter, and spring quarters.* Professor Pierson.

*DEPARTMENT OF MATHEMATICS

Archibald Henderson, Thomas Felix Hickerson, John Wayne Lasley, Jr., Allan Wilson Hobbs, Edward Tankard Browne, Ernest Lloyd Mackie, Joe Burton Linker, Professors.
Arthur Simeon Winsor, Michael Arendell Hill, Vinton Asbury Hoyle, Associate Professors.
Nathan Jacobson, Edward Alexander Cameron, Witold Hurewicz, Assistant Professors.

The subject of mathematics constitutes the foundation upon which the general subject of engineering, in its broader aspects, solidly rests. This is true of such subjects as electrical, chemical, and mining engineering; more especially, all work in scientific design of structures and in civil engineering depends upon minute and detailed knowledge of mathematical laws and principles.

On the pedagogical side many of the courses, in particular those in pure mathematics, are designed for the student who intends to become a teacher in the schools or a professor in a college or university. In the light of the advance of mathematical science and the wide ramifications of the more modern branches, many courses are offered to enable the student to specialize along a number of different lines. A group of courses permits specialization in the general subject of geometry; another group of courses deals with the broad division of analysis; a third grouping permits specialization in mechanics.

The Resources of the Department

In Phillips Hall are housed the Department of Mathematics and the Department of Physics. In the Department of Mathematics are now given courses in drawing, plane surveying, theoretical and applied mechanics, and the strength of materials. In addition to lecture halls and departmental offices, there are two seminar rooms, one large room where the weekly meetings of the Mathematics Seminar are held, one small room for advanced classes, where the collection of steel and wire models is on display in cabinets.

Requirements for Advanced Degrees

The courses in the major subjects are to be selected from the courses enumerated and described below, reference being had to the particular degree sought. The courses may be

* For recent changes in the undergraduate major in mathematics, see the General Catalogue of the University.

grouped under four main divisions: algebra, analysis, geometry, and mechanics. The grouping and order of the courses will be arranged by conference between professor and student, the controlling factors being the previous preparation and training of the student and the particular degree sought.

The courses in the minor subjects, as a rule, will be chosen from the general fields of the allied and related sciences. However, if desired, all of the work may be done in the department.

For courses in the teaching of mathematics, see Department of Education; in the philosophy of mathematics, see Department of Philosophy.

Courses for Graduates and Advanced Undergraduates

101. ADVANCED PLANE ANALYTIC GEOMETRY (3). Prerequisite, Mathematics 31. *Three hours a week, fall quarter.* Professor Henderson.

103. COLLEGE GEOMETRY (5). Prerequisite, Mathematics 33. *Five hours a week, spring quarter.* Professor Winsor.

104. ADVANCED COLLEGE ALGEBRA (5). Prerequisite, Mathematics 33.

This course supplements Mathematics 103. It is designed especially for teachers, and serves to bridge the gap between elementary algebra and Mathematics 246. Selected topics in advanced algebra, including such subjects as linear and quadratic forms, limits and series, complex numbers, elementary groups, etc. *Five hours a week, winter quarter.* Professor Cameron.

105. HISTORY OF MATHEMATICS (5). Prerequisite, Mathematics 31-32-33 or 21-22-23 and 36.

A survey course in the history of the evolution of mathematics, including arithmetic, algebra, geometry, trigonometry, analytic geometry, and calculus, from the earliest times down to the present. The treatment is technical as well as historical, presenting the details of mathematical development. The course is enriched with biographical studies of eminent mathematicians. *Five hours a week, winter quarter.* Professor Hill.

111. MATHEMATICAL STATISTICS (5). Prerequisite, Mathematics 33 or equivalent.

A course dealing with the elementary theory and applications of mathematical statistics, treating in detail the following topics: graphs, averages, dispersion, skewness, sampling, probable error, frequency curves and correlation. The course is designed to serve as a background for students dealing with statistical and observational data. *Five hours a week, winter quarter.* Professor Hill.

121. THEORETICAL AND APPLIED MECHANICS: STATICS (5).

The fundamentals of statics, including basic conceptions and definitions; resultants of force systems; equilibrium of force systems; friction; first moments and centroids; moments of inertia of areas

and bodies. This course and its sequels, 122 and 123, are comparable to those offered at the accredited engineering schools of the country. *Five hours a week, fall quarter.* Professor Hickerson.

122. THEORETICAL AND APPLIED MECHANICS: KINEMATICS AND KINETICS (5).

Motion of a particle; translation, rotation, and plane motion of rigid bodies; work and energy; impulse and momentum. *Five hours a week, winter quarter.* Professor Hickerson.

123. THE STRENGTH OF MATERIALS (6).

Stresses and strains in tension, compression, and shear; riveted and welded joints; torsion of shafts; shear, moment, and stresses in beams, deflection of beams by the double-integration and moment-area methods; fixed, restrained, and continuous beams; resilience; combined stresses; composite beams; columns; energy loads. Parallel laboratory tests on specimens of steel, wrought iron, cast iron, concrete, and wood. *Five lecture and two laboratory hours a week, spring quarter. Laboratory fee, $4.00.* Professor Hickerson.

124. HYDRAULICS (5). Prerequisite, Mathematics 121-123.

Properties of fluids; principles of hydrostatics; the measurement of pressure; hydrostatic equilibrium. Principles of hydro-dynamics involving forces in fluids in motion; the flow of water through orifices, weirs, tubes, nozzles, pipes, and open channels; fundamental mechanics of impulse and momentum of fluids in motion. *Five hours a week, fall quarter.* Professor Trimble.

125. STRUCTURAL FRAMEWORKS (5). Prerequisite, Mathematics 121-123.

Basic mathematical theory of steel and concrete structures, with special reference to buildings, dams, water towers, and foundations, and their component parts, such as beams, slabs, columns, frames, and roof trusses. *Five hours a week, winter quarter.* Professor Hickerson.

131. THEORY OF EQUATIONS (5). Prerequisite, Mathematics 33.

Indispensable for students intending to prosecute studies in the higher branches of pure mathematics. Such subjects as the solution of equations of higher degree, transformations, determinants, elimination, invariants and covariants, and symmetric functions are treated in detail. The student is afforded a survey of the general problem, and the basic principles of the formation, handling, and evolution of equations. *Five hours a week, winter quarter.* Professor Winsor.

141. DIFFERENTIAL EQUATIONS (5). Prerequisite, Mathematics 33.

This is a course both for students intending to specialize in mathematics and for students in advanced engineering, civil, electrical, and chemical. Among the subjects treated are singular solutions, applications to mechanics, geometry and physics, linear equations with both constant and variable coefficients, equations involving more than two variables, partial differential equations, and spatial forms. *Five hours a week, fall quarter.* Professor Linker.

151. PROJECTIVE HOMOGENEOUS COORDINATES AND THEIR APPLICATIONS (5). Prerequisite, Mathematics 33.

A study of the general homogeneous coordinates of forms of one, two, three, and four dimensions; cross ratio and its properties; ideal elements; duality; projective correspondence; transformation of coordinates; the elements of line geometry. *Five hours a week, fall quarter.* Professor Lasley.

152. ANALYTIC PROJECTIVE GEOMETRY (5). Prerequisite, Mathematics 151.

The projective theory of binary forms; the conic as a rational curve; the conic as a ternary form; the conic from the viewpoint of the theory of correlations; functional determinants and invariants; selected topics from higher geometry. *Five hours a week, winter quarter.* Professor Lasley.

161. ANALYTIC GEOMETRY OF SPACE (5). Prerequisite, Mathematics 33.

Spatial relations are treated from the analytic standpoint. Deals with quadric surfaces, envelopes, foci, quadriplanar and tetrahedral coordinates, developable surfaces, curves in space, curvature of surfaces, higher surfaces, etc. *Five hours a week, fall quarter.* Professor Browne.

171. ADVANCED CALCULUS (5). Prerequisite, Mathematics 33.

This course completes and rounds out the subject as given in Mathematics 33. Stress upon rigor in demonstration. Designed to meet the particular needs of the class, e.g., problem course on study of special functions. Thorough knowledge of calculus is the aim of the course. *Five hours a week, spring quarter.* Professor Mackie.

181 (231). THEORY OF NUMBERS (5). Prerequisite, Mathematics 131.

An elementary course in the study of the properties of the rational integers, including the study of the question of divisibility, greatest common divisor of two or more integers, solution of simple congruences, quadratic residues, quadratic reciprocity law, representation of integers by quadratic forms, equivalence of quadratic forms, etc. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Browne.

Courses for Graduates

206. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE I (5). Prerequisite, Mathematics 131, 141, and 171.

Complex numbers, differentiation and integration, conformal mapping, linear fractional transformations, single and multiple valued functions. *Five hours a week, winter quarter.* Professor Henderson.

207. THEORY OF FUNCTIONS OF A COMPLEX VARIABLE II (5). Prerequisite, Mathematics 206.

Power series and analytic continuation, entire and meromorphic functions, conformal mapping, Riemann surfaces. *Five hours a week, winter quarter.* Professor Jacobson.

211. VECTOR ANALYSIS (5). Prerequisite, Mathematics 121, 141, and 161, or equivalent.

A study of vector analysis with applications to mechanics, physics, and geometry. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Hobbs.

216. DYNAMICS (5). Prerequisite, Mathematics 211.

Differential equations of motion, equations of orbits, D'Alembert's principle, motion of a rigid body. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Hobbs.

221. PARTIAL DIFFERENTIAL EQUATIONS (5). Prerequisite, Mathematics 141.

An elementary treatment of partial differential equations with special emphasis upon applications. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Hobbs.

226. FOUNDATIONS OF GEOMETRY (5). Prerequisite, Mathematics 151.

A course designed to meet the needs of students experienced in mathematical thinking. A survey of the contributions of Pasch, Peano, Hilbert, and their school to our knowledge of the foundations of geometry; a study of the axioms, of systems of geometry, etc. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Henderson.

232-233-234. ALGEBRAIC THEORY OF NUMBERS (15). Prerequisite, Mathematics 131 and 181 recommended.

In this course the theory of ideals will be developed which serves as a substitute for the theory of prime number decomposition in those domains where the classical theory fails to hold. Then, linking the Galois Theory and the theory of ideals, the Hilbert-Dedekind Theory will be evolved, and finally the class-field theory will be discussed. (1940-1941 and alternate years.) *Five hours a week, fall, winter, and spring quarters.* Professor Jacobson.

236. HIGHER PLANE CURVES (5). Prerequisite, Mathematics 152.

A course dealing with plane curves, particularly conics, cubics, and quartics; polarity, Plücker formulas, curves of Hesse, Steiner, and Cayley; classification of cubics, intersections of curves, singularities of curves, unicursal curves. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Lasley.

241. LIE THEORY OF DIFFERENTIAL EQUATIONS (5). Prerequisite, Mathematics 141.

A study of differential equations from the point of view of continuous groups. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Hobbs.

242. CONTINUOUS GROUPS (5).

This course will deal with global as well as local properties of continuous groups. The essentials of Lie's Theory will be discussed and stress laid on the algebraic problems arising in this connection. Examples of simple Lie groups will be studied in some detail. (1940-1941 and alternate years.) *Five hours a week, spring quarter* Professor Jacobson.

246. MODERN HIGHER ALGEBRA (5). Prerequisite, Mathematics 131.

Polynomials and their fundamental properties, determinants, theory of linear dependence, linear equations, matrices, invariants, bilinear and quadratic forms. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Browne.

251. ELEMENTS OF NON-EUCLIDEAN GEOMETRY (5). Prerequisite, Mathematics 151.

The subject is treated chronologically. The contributions of Saccheri, Bolyai, Lobachewsky, Riemann, Cayley, Klein are studied, analyzed, and compared. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Henderson.

256. ALGEBRAIC INVARIANTS (5). Prerequisite, Mathematics 131 and 152.

An introduction to the non-symbolic theory of invariants of binary forms with applications to geometry, followed by an explanation of the symbolic notation of Clebsch with practice in its use. Based on Dickson's *Algebraic Invariants.* (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Browne.

261. DIFFERENTIAL GEOMETRY (5). Prerequisite, Mathematics 141 and 152.

A study of the metric differential geometry of curves, surfaces, and curves on surfaces, systems of curves defined by differential equations, surfaces given by two quadratic differential forms. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Lasley.

266-267-268. THEORY OF FUNCTIONS OF A REAL VARIABLE (15). Prerequisite, Mathematics 131 and 171.

The real number system from the standpoint of Cantor and Dedekind, elementary theory of point sets, limits, series, implicit functions, Riemann and Lebesgue integrals. (1940-1941 and alternate years.) *Five hours a week, fall, winter, and spring quarters.* Professor Hurewicz.

271. INTRODUCTION TO THE THEORY OF RELATIVITY (5). Prerequisite, Mathematics 121 and 141.

In this course the essential features of the special and general relativity theories of Einstein are set forth from the mathematical point of view. Particular study is made of the Lorentz transformation and of the three crucial tests of the theory. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Henderson.

272. TENSOR ANALYSIS (5). Prerequisite, Mathematics 141 and 271.

A study of transformations of coordinates and tensor invariants under such transformations. Especial attention is paid to the application of tensors to the study of differential geometry and relativity theory. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Hoyle.

273. ADVANCED RELATIVITY THEORY (5).

Restricted relativity, with applications to physical and electrical problems. General relativity and gravitation. Geodesics and curva-

ture in space-time. Cosmological speculations as to a finite, unbounded universe, and also an expanding universe. Theories of Einstein, DeSitter, Eddington, and LeMaitre. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Henderson.

280 (281). CALCULUS OF VARIATIONS (5). Prerequisite, Mathematics 266.

A study of various kinds of minimizing problems, determining functions which minimize certain definite integrals. Isoperimetric problems. Necessary conditions for an extreme as deduced by Euler, Weierstrass, Legendre, and Jacobi, and conditions sufficient to insure such an extreme. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Mackie.

291. INTRODUCTION TO THE THEORY OF FINITE GROUPS (5). Prerequisite, Mathematics 131.

Deals with the theory of substitutions in general, and as applied to the algebraic equation. Simple and compound groups, transitivity and primitivity. Cyclic and linear groups, linear fractional substitutions, etc. Numerous applications in algebra and geometry. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Henderson.

296-297-298. BASIC TOPICS IN MODERN ALGEBRA (5 each). Prerequisite, Mathematics 131.

This course, for graduates only, will deal with certain fundamental aspects of modern algebra, from the axiomatic point of view. The essential theorems will be elucidated in concrete examples. The topics to be treated are: I. Groups; II. Rings; III. Factorization Theory; IV. Fields; V. Galois Theory; VI. Vector Spaces and Linear Transformations. (1941-1942 and alternate years.) *Five hours a week, fall, winter, and spring quarters.* Professor Jacobson.

SEMINARS AND THESES (5 each with thesis).

Reading and research in mathematics conducted by members of the department, as follows:

351. Thesis work and seminar. Professor Henderson.

352. Thesis work and seminar. Professor Hickerson.

356. Thesis work and seminar. Professor Lasley.

361. Thesis work and seminar. Professor Hobbs.

366. Thesis work and seminar. Professor Browne.

371. Thesis work and seminar. Professor Winsor.

372. Thesis work and seminar. Professor Hoyle.

373. Thesis work and seminar. Professor Hill.

376. Thesis work and seminar. Professor Mackie.

381. Thesis work and seminar. Professor Jacobson.

386. Thesis work and seminar. Professor Hurewicz.

DEPARTMENT OF MUSIC

Glen Haydon, Professor.
Benjamin Franklin Swalin, Earl Anderson Slocum, Associate Professors.
Jan Philip Schinhan, Assistant Professor.

Graduate work in Music is designed to meet the needs of three classes of students: (1) those who intend by intensive study and research to specialize in musicology; (2) those who are teachers or who are preparing to teach; (3) those who desire a knowledge of music for cultural purposes.

1. Intensive study and research are made possible through advanced lecture courses, seminars, the library equipment of books, music, reprints of old manuscripts, current musicological publications, recordings, and the laboratory facilities afforded by the departmental equipment of instruments, musical organizations, etc., which are available for experimental or demonstration purposes. Unusual materials are made accessible through the inter-library loan system and the photographic institutes of the leading libraries in this country and abroad.

2. In view of the constantly increasing demand for well-trained teachers in secondary schools, colleges, and universities, courses are offered designed in content and method to meet this demand.

3. The department aims also to cooperate with other departments in the University for cultural and scientific ends.

Courses for Graduates and Advanced Undergraduates

101-102-103. MUSICOLOGY (9). Prerequisite, a reading knowledge of one or more of the important foreign languages, a fair knowledge of musical theory, and some skill in practical applied music.

A study of the problems and methods in the various fields, historical and systematic, of musical research. *Three hours a week, fall, winter, and spring quarters.* Professor Haydon.

*121, 122, 123. STUDIES IN THE HISTORY OF MUSIC (9). Prerequisite, Music 24, 25, 26 and 44-45-46.

A critical study of certain composers or periods of musical development, such as Johann Sebastian Bach, Richard Wagner, or The Music of the Sixteenth Century. *Three hours a week, fall, winter, and spring quarters.* Professor Swalin.

*124, 125, 126. MODERN MUSIC (9). Prerequisite, Music 24, 25, 26 and 44-45-46.

The three divisions of this course relate to Neo-Romanticism,

* Music 121, 122, 123 or 124, 125, 126 will be given as the demand warrants.

Musical Impressionism, and Musical Expressionism, respectively. A critical analysis of selected works by representative modern composers will be essayed, and an effort made to correlate these studies with other phases of art and culture. Students may be admitted to the course at the beginning of each quarter, with the permission of the instructor. *Three hours a week, fall, winter, and spring quarters.* Professor Swalin.

161-162-163. FREE COUNTERPOINT, CANON AND FUGUE (9). Prerequisite, Music 61-62-63.

A study of contrapuntal procedure, with particular reference to the style of Bach. *Three hours a week, fall, winter, and spring quarters.* Professor Slocum.

*174-175-176. ANALYSIS AND COMPOSITION IN THE LARGER FORMS (9). Prerequisite, Music 74-75-76.

Three hours a week, fall, winter, and spring quarters. Professor Schinhan.

Courses for Graduates

201. SPECIAL STUDIES (To be arranged).

The Department is ready to assist and advise competent graduate students who may propose plans for either research or creative work which meet with its approval. Hours and credit to be arranged. The staff, Professor Haydon in charge.

*204-205-206. COMPARATIVE MUSICOLOGY (9).

A survey of representative systems of primitive and folk music; discussion of cultural and musical implications; a study of problems and methods of research with exercises in transcription and analysis of records made in the field. *Three hours a week, fall, winter, and spring quarters.* Professor Schinhan.

301-302-303. SEMINAR: MUSICOLOGY (9).

Special topics or fields of study will be selected for each quarter after consultation with the class. *Three hours a week, fall, winter, and spring quarters.* Professor Haydon.

* Music 174-175-176 or 204-205-206 will be given as the demand warrants.

DEPARTMENT OF PHARMACOLOGY

WILLIAM DEBERNIERE MACNIDER, Professor.
GRANT LESTER DONNELLY, Associate Professor.

The following courses are accepted as satisfying requirements for minors in programs of study having majors in certain other sciences.

171-172. PHARMACOLOGY (12½). Credit in the Graduate School: 2 courses. Prerequisite, Biochemistry and Physiology.

This course covers two quarters in the second year of the medical curriculum. The character of the work permits a division of the course into three parts: (a) A consideration of the ways in which drugs may affect the organism. This introduction embraces a discussion of the various physio-chemical forces influencing drug activity, and the modification of the action of these conditions in different pathological states of the organism, such, for instance, as febrile conditions and various metabolic disturbances. (b) A general study of the pharmacology of the important drugs. The drugs are considered in groups depending upon their predominant effect in the body. The student learns the preparation, their dose, physiological incompatibilities, and considers in detail the way in which the drugs act as pharmacological agents. The symptoms and treatment of poisoning are considered following the discussion of the pharmacology of the group. (c) A consideration of the pharmacology of the drugs in the pathological animal, with a discussion of the modification of drug activity in various pathological states. In conjunction with this study emphasis is given to the use of drugs as therapeutic agents and a study is made employing such remedies as are indicated in the form of a prescription. Students are required to write prescriptions, which are then subjected to the criticism of various members of the class and the instructor. *Five hours a week, fall and winter quarters.* The laboratory: Pharmacodynamics. This part of the general course in pharmacology consists in a careful and accurate study of the action of practically all of the more important drugs on animals. For this work, the higher animals, such as the cat and dog, are chiefly used. The class is divided into groups of two or four, and experimental work is conducted by the student. Each student is required to hand in to the instructor at the completion of the course a laboratory notebook containing a detailed account of each experiment, an explanation of the results obtained, and the tracings made during the experiment. Oral and written recitations are frequently held. *Five laboratory hours a week, fall and winter quarters.* Professors MacNider, Donnelly.

173. ADVANCED PHARMACOLOGY (5). Credit in the Graduate School: 1 course. Prerequisite, Biochemistry and Physiology and Pharmacology 171-172.

Two types of courses will be offered: (a) an experimental study of the action of various drugs upon the normal animal, (b) an experimental study of the action of various drugs and other agencies upon the pathological animal. *Hours by arrangement.* Professor MacNider.

SCHOOL OF PHARMACY

JOHN GROVER BEARD, HENRY MATTHEW BURLAGE, HENRY ROLAND TOTTEN, MARION LEE JACOBS, Professors.

The School of Pharmacy offers graduate courses in three major fields which lead to the degree of Master of Science in Pharmacy. Admission to candidacy for these courses presupposes the completion of a standard four-year curriculum in pharmacy in the University, or in other universities or colleges having pharmaceutical curricula acceptable to the Graduate School. The master's degree may ordinarily be obtained in one year after the conferring of the bachelor's degree. The major fields are pharmacy, pharmaceutical chemistry, materia medica and pharmacognosy.

Instruction is mainly along the lines of research and is given by means of lectures, recitations, and seminars combined with appropriate work in laboratories.

The profession of pharmacy provides several opportunities to men or women who have been prepared properly by basic and technical training to qualify for the varied responsibilities involved. These opportunities include manufacturing pharmacy or pharmaceutical chemistry; government service in the medical sciences; teaching; and investigative work for certain foundations engaged in pharmaceutical research.

The School of Pharmacy occupies exclusively a building containing thirty-five rooms and 22,000 square feet of floor area. Its departmental library and laboratory facilities are well adapted to graduate instruction but free use is nevertheless made of the library and laboratory facilities offered to students of pharmacy by the Departments of Botany, Chemistry, Pharmacognosy, Pharmacology, Physiology, and by the University Library. In addition, students with majors in materia medica find available in the Arboretum and medicinal plant garden which adjoin Howell Hall of Pharmacy abundant source material for study and research.

Materia Medica and Pharmacognosy

Courses for Graduates

391-392-393. RESEARCH IN MATERIA MEDICA AND PHARMACOGNOSY (15).

These advanced courses consist of laboratory work, conferences with the major professor, and library investigations relating to research. The professor in charge is responsible for the assignment and approval of the subject and character of the thesis. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professors Beard, Totten.

Pharmaceutical Chemistry

Courses for Graduates and Advanced Undergraduates

163. ORGANIC PHARMACEUTICAL CHEMISTRY (5). Prerequisite, Pharmaceutical Chemistry 61-62, or equivalent.

A study of the more important medicinal plant products and synthetic drugs. The laboratory work will consist of the isolation, purification, and identification of plant constituents and the synthesis of simple organic medicinal compounds. *Two lecture and six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Jacobs; Assistant.

172. PHARMACEUTICAL ANALYSIS (5). Prerequisite, Pharmaceutical Chemistry 64, or equivalent.

A laboratory course supplemented by lectures emphasizing the more advanced and special assay methods of the *United States Pharmacopeia* and *National Formulary. Two lecture and six laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Professor Jacobs; Assistant.

173. FOOD AND DRUG ANALYSIS (5). Prerequisite, Pharmaceutical Chemistry 172, or equivalent.

A laboratory and lecture course dealing with the methods employed by government laboratories to control food and drug products. *Two lecture and six laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Jacobs; Assistant.

Courses for Graduates

241-242-243. ADVANCED PHARMACEUTICAL CHEMISTRY (15). Prerequisite, Pharmaceutical Chemistry 61-62 or equivalent.

A study of the more complex medicinal plant products and synthetic drugs, with special emphasis on their isolation, purification, identification, preparation, and structure. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Jacobs.

361-362-363. SEMINAR (3).

Required of all graduate students with majors in pharmaceutical chemistry. *One hour a week, fall, winter, and spring quarters.* Members of the Staff.

391-392-393. RESEARCH IN PHARMACEUTICAL CHEMISTRY (15).

Statements regarding Materia Medica 391-392-393 apply to this course. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Jacobs.

Pharmacy

Courses for Graduates and Advanced Undergraduates

191, 192, 193. CRITICAL STUDIES OF DISPENSING PROBLEMS, OFFICIAL PREPARATIONS, AND THEIR ASSAYS (5 each).

One lecture and eight laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $7.50 a quarter. Members of the Staff.

Courses for Graduates

261-262-263. MEDICINAL PLANT PRODUCTS AND THEIR PREPARATIONS (15).

Advanced studies of medicinal plant products emphasizing their constitution, formation, isolation, identification, preparations and possible uses in medicines, and other items relating to pharmacy. Readings and discussions of recent advances in this branch of pharmacy are presented. *Two lecture and six laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Burlage.

351-352-353. SEMINAR (3).

Required of all graduate students with majors in pharmacy. Reports and discussions relating to recent advances in all branches of pharmacy and related sciences. *One hour a week, fall, winter, and spring quarters.* Members of Staff.

391-392-393. RESEARCH IN PHARMACY (15).

Statements regarding Materia Medica 391-392-393 apply to this course. *One lecture and nine laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $10.00 a quarter.* Professor Burlage.

DEPARTMENT OF PHILOSOPHY

Henry Horace Williams, Kenan Professor Emeritus.
Francis Foster Bradshaw, *George Finger Thomas, Professors.
Helmut Kuhn, Visiting Professor.
Stephen Albert Emery, Associate Professor.
Louis Osgood Kattsoff, Assistant Professor.

The graduate courses in philosophy are designed to present and discuss its classics, current literature, and basic problems, so as to stimulate critical and original philosophical thought, to prepare students for college and university positions in philosophy, and to broaden the background of advanced students having major interests in other fields.

The Department offers programs of study leading to the degrees of Master of Arts and Doctor of Philosophy. For those planning to teach philosophy the doctor's degree is recommended as usually necessary in securing a position of professorial rank. Those, however, who do not intend to teach or who cannot commit themselves to several consecutive years of study will be welcomed as candidates for the master's degree. Before admission to candidacy for either degree the student must have completed thirty quarter-hours (or the equivalent) of undergraduate work in philosophy, ten of these hours in the history of philosophy. Deficiencies must be made up without graduate credit, but a deficiency in the history of philosophy may be removed by special reading and the passing of an examination without courses in this field. In addition to the general requirements of the Graduate School for the master's and doctor's degrees the Department does not impose any fixed rules. The members of the staff will consult frequently with individual students and formulate programs adapted to their special interests and needs.

The geographical proximity of Duke University enables this Department, where circumstances make it desirable, to grant graduate credit for certain courses in philosophy taken there.

The University Library has extensive and steadily growing collections of volumes in the chief fields of philosophy and the transitional regions, linking philosophy with the natural and social sciences and the humanities. The library is at present subscribing to eighteen philosophical journals in English,

* Professor Thomas is on leave of absence during the 1939-1940 spring quarter and will resign from the University faculty in June, 1940.

French, German, and Italian, for many of which it possesses complete (or almost complete) files.

Two Graham Kenan Fellowships in Philosophy are awarded annually to the applicants who present the best evidence of present attainment and future promise. Each fellowship carries an annual stipend of seven hundred dollars and may be held for two or more consecutive years by deserving students.

Courses for Graduates and Advanced Undergraduates

121. KANT (5). Prerequisite, Philosophy 58 or special permission.

A study of Kant's Critical Philosophy as rooted in eighteenth century empiricism and rationalism and as initiating German idealism. Lectures, readings, and discussion. *Five hours a week, fall quarter.* Professor Emery.

122. PLATO AND ARISTOTLE (5). Prerequisite, Philosophy 56 or special permission.

This course is designed for those who desire to make a more careful study of Plato and Aristotle than is possible in Philosophy 56. Some of the later dialogues of Plato will be read and selections from Aristotle's treatises on nature, the soul, and ethics will be analyzed. The nature of Plato's influence upon Plotinus and of Aristotle's influence upon Aquinas will be indicated. *Five hours a week, winter quarter.* Visiting Professor Kuhn.

123. CONTINENTAL RATIONALISM (5). Prerequisite, Philosophy 58 or special permission.

The breakdown of the authoritarianism of the Middle Ages. The increase of travel and the development of science, destroying the old criteria of morals and truth and producing such men as Montaigne and Bruno. Descartes' search for a new criterion in reason. The development of rationalism through Leibniz and Spinoza, and its influence on literature, religion, and political thought. Rationalism as a method will be evaluated on the basis of these studies. Readings in Descartes, Spinoza, and Leibniz; papers and discussions. (1941-1942 and alternate years, alternating with Philosophy 126.) *Five hours a week, winter quarter.* Professor Kattsoff.

124. PHILOSOPHY OF THE NINETEENTH CENTURY (5). Prerequisite, Philosophy 58 or special permission.

German idealism (Fichte, Schelling, Hegel), materialism (Marx), and voluntarism (Schopenhauer, Hartmann, Nietzsche); French positivism (Saint-Simon, Comte) and its opponents; English empiricism (Mill, Spencer) and its idealistic critics (Green, Bradley). The mutual influence of these movements as forming the texture of European thought in the last century and leading to recent American philosophy. Lectures, readings, and discussion. *Five hours a week, fall quarter.* Visiting Professor Kuhn.

125. ENGLISH PHILOSOPHICAL THOUGHT SINCE 1750 (5).

A study of some of the major issues of modern English philosophy and literature and of their significance for the present day: the culmination of Empiricism (Hume); the reaction of Romanticism

against the "age of reason" (Burke, Wordsworth); the development of Utilitarianism (Bentham, Mill); the conflict between Naturalism and Idealism (Coleridge, Huxley, Ward); and the issue between Liberalism (Green, Hobhouse) and Socialism (Morris, Strachey). *Five hours a week, spring quarter.* Professor .....

126. CONTEMPORARY AMERICAN PHILOSOPHY (5). Prerequisite, Philosophy 21-22-23 or 41 or 58.

A study of the chief works of representative philosophers (Dewey, Whitehead, Lovejoy, Santayana, Montague, etc.). A survey of important movements, such as Idealism, Pragmatism, Realism, and Positivism. The reciprocal influence of these movements and general cultural changes will be traced. (1940-1941 and alternate years, alternating with Philosophy 123.) *Five hours a week, winter quarter.* Professor Kattsoff.

131, 132, 133. LOGIC AND CIVILIZATION (5 each).

A study of the universal principles in the development of civilization. An attempt, based on Hegel's philosophy, to understand the currents of thought and action directing our modern world and to lay the foundations for a philosophical approach to problems. First quarter: the development of mind from naïve sensory awareness to the philosophical point of view, with illustrations in history, science, religion, politics, and social theory. Second quarter: the study and application of the fundamental categories expressed in the individual and the world about him. Third quarter: the application of the categories to the philosophy of mind, art, and religion. May be entered any quarter. Special permission is necessary for credit, if only one quarter is taken. *Five hours a week throughout the year. Fall and winter quarters,* Professor Kattsoff; *spring quarter,* Professor Emery.

134. INTRODUCTION TO SYMBOLIC LOGIC (5).

The new symbolic approach to the logic of classes, propositions, propositional functions, and the nature of implication. Applications of this technique in the natural and social sciences. Hours to be arranged with instructor. *Five hours a week, spring quarter.* Professor Kattsoff.

141. THE PHILOSOPHY OF MATHEMATICS (5).

Analysis of the fundamental concepts of mathematics. Its logical development; recent controversies on its foundations. *Five hours a week, fall quarter.* Professor Kattsoff.

142. A CRITICAL APPROACH TO SOCIAL PSYCHOLOGY (5). Prerequisite, at least two courses in philosophy, psychology, or sociology.

First, on the basis of scientific psychological data obtained from the study of attitudes, interests, and emotions a theory of values and aims of society will be set up and subjected to critical philosophical study. *Second,* a sociological study of existing society will exhibit its various institutions. *Finally,* these institutions will be evaluated in terms of the theory of values earlier established, and necessary societal changes will be indicated. The possibility of an experimental and engineering social psychology will be discussed. (1940-1941 and alternate years, alternating with Philosophy 71.) *Five hours a week, spring quarter.* Professor Kattsoff.

171, 172, 173. ETHICS AND CIVILIZATION (5 each).

A survey of ethics, historical and contemporary. The first quarter is concerned with the beginnings of ethical standards in the historical religions of the world and the subsequent development of ethical theory. The second quarter traces the contributions to the theory of values made by the scientific developments of the last two centuries. The third quarter is devoted to contemporary ethical problems, economic, political, and personal; and the logical foundation of ethical theory. Lectures, discussion, and directed readings. Special permission of the instructor is necessary for credit if only one quarter is taken. *Five hours a week throughout the year.* Professor Bradshaw.

Courses for Graduates

227-228-229. STUDIES IN HEGEL (15).

This course aims to consider Hegel's system as grounded in the *Logik* and exhibited in the *Phenomenologie. Five hours a week throughout the year.* Professor Williams.

301, 302, 303. SEMINAR IN EPISTEMOLOGY, METAPHYSICS, AND PHILOSOPHY OF VALUES (3 each).

Special topics and readings will be selected each quarter in consultation with the students concerned. *Fall quarter,* Professor Kattsoff; *winter quarter,* Professor Emery; *spring quarter,* Professor .....

311. SPECIAL READINGS (5).

Reading in a special field under the direction of a member of the Department.

DEPARTMENT OF PHYSICS

Arthur Edward Ruark, Otto Stuhlman, Jr., Earle Keith Plyler, Professors.
Russell H. Lyddane, Assistant Professor.

The demand for versatile physicists holding the Ph.D. degree exceeds the supply, and initial salaries are usually somewhat higher than those available to men of corresponding ability in other fields of science. Graduate work in physics should be particularly attractive to men who have done their undergraduate work in engineering, since engineering physicists are coming rapidly to the front in technical organizations. Opportunities in the government service and in college teaching, for those who are principally interested in scholarly research, are far from exhausted, although in these fields the financial compensation is customarily less than in industrial positions.

Graduate courses are arranged in a two-year cycle. Candidates for the master's degree are encouraged to remain two years, in which time they can earn credits in excess of those required for the degree. It is possible to obtain the master's degree in three quarters but this involves very concentrated effort, so that usually a candidate prefers to spend at least three quarters on course work and another quarter on the thesis.

Prospective candidates should obtain a course in differential equations and should prepare themselves to read scientific French or German, during their undergraduate work.

The graduate courses are designed to give a broad understanding of the subject, with proper balance between classical physics and quantum physics, and between theoretical and experimental studies. No attempt is made in course work to train highly specialized technicians, because of our belief that detailed techniques can easily be acquired by the individual when he needs them. Candidates for the Ph.D. degree are encouraged to perform several researches, preferably in different fields, with corresponding remission of formal course work. Graduate students are expected to present papers before a colloquium, held every two weeks. In alternate weeks there is a joint colloquium, held in cooperation with the Department of Physics of Duke University, and addressed by members of the two faculties of physics.

The student whose major is in another science will find here a group of subjects from which to choose a minor of real utility in his professional work.

With the permission of the faculty, holders of the Ph.D. degree in physics may use the research facilities of the department during the summer sessions, the only charges being those for material consumed.

The department is housed in Phillips Hall. The fields of research cultivated here are nuclear physics and radioactivity, infra-red spectra, and spectral intensities in the visible and ultra-violet. Excellent apparatus is available for work in these fields and there is a well-equipped shop, supervised by a skilled instrument maker. The researches of the department are published principally in *The Physical Review, The Journal of Chemical Physics,* and *The Review of Scientific Instruments.* The departmental library, located in Phillips Hall, is rich in long series of the leading physical and mathematical journals. A recent gift from the General Education Board makes this library particularly useful to students of atomic and molecular physics.

One teaching fellowship and several graduate assistantships are available.

Courses for Graduates and Advanced Undergraduates

101. INTRODUCTION TO MATHEMATICAL PHYSICS (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56, 58.

Mathematical treatment of dynamics, statistical mechanics, thermodynamics, and electricity. Text: Page, *Introduction to Theoretical Physics.* (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Plyler.

105. INDUSTRIAL PHYSICS (5). Prerequisite, three of the group: 52, 53, 55, 56, 58, except by permission.

Studies of the use of physics for manufacturing control and research in industry. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Ruark.

106. PHYSICAL MEASUREMENTS AND TECHNIQUES (5). Prerequisite, three of the group: Physics 52, 53, 55, 56, 58, except by permission.

The student works with many precision instruments and learns important research procedures, such as vacuum technique, ionization measurements, the use of spectrographic equipment, oscillographs, and electron tube applications. (1941-1942 and alternate years.) *Ten laboratory hours a week, winter quarter. Laboratory fee, $5.00.* Professor Ruark and other members of the staff.

110. PHYSICAL MECHANICS (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56, 58.

Lectures, problems. Text: Lindsay, *Physical Mechanics.* (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Stuhlman or Professor Plyler.

120. HEAT AND INTRODUCTORY THERMODYNAMICS (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 54, 55, 56, 58.

More advanced and detailed than Physics 56, with emphasis on theory rather than experiment. Conduction of heat, kinetic theory, and thermodynamics. Text: Saha and Srivastava, *Heat.* (1940-1941 and alternate years.) *Four lecture and two laboratory hours a week, fall quarter. Laboratory fee, $3.00.* Professor Plyler.

140. ELECTRICITY AND MAGNETISM (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56, 58.

Electrostatics, electrodynamics, and magnetic phenomena. Text: Page and Adams, *Principles of Electricity.* (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Plyler.

141. ADVANCED ELECTRICITY AND MAGNETISM (5). Prerequisite, Calculus and Physics 140.

Continuation of Physics 140, with laboratory work, including high frequency measurements. Text: Page and Adams, *Principles of Electricity.* (1941-1942 and alternate years.) *Four lecture and two laboratory hours a week, spring quarter. Laboratory fee, $3.00.* Professor Plyler.

150. PHYSICAL OPTICS (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56.

Diffraction, interference, polarization, resonance radiation, scattering, emission, and absorption; the electromagnetic theory of light. Text: Wood, *Physical Optics.* (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Ruark.

153. OPTICS (5). Prerequisite, Physics 21-22-23 or 24-25.

Identical with Physics 53, except that additional laboratory work and problems are required of graduate students enrolling in 153. *Four lecture and four laboratory hours a week, fall quarter. Laboratory fee, $3.00.* Professor Stuhlman.

160. ELECTRONICS AND ATOMIC PHYSICS (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56.

Ionization phenomena; the electron and other elementary particles, photoelectric effect, thermionics, isotopes, elementary quantum theory, absorption and emission of radiant energy, Zeeman and Stark effects, X-rays, wave properties of matter, radioactivity. Text: Harnwell and Livingood, *Experimental Atomic Physics. Five hours a week, winter quarter.* Professor Stuhlman.

161. RADIOACTIVITY (5). Prerequisite, Calculus and one of the following: Physics 52, 53, 55, 56.

Radioactive elements and their radiations; neutrons, positrons, artificial disintegration; artificially radioactive elements; their use as chemical indicators; cosmic rays. Text: Rasetti, *Introduction to Nuclear Physics.* (1941-1942 and alternate years.) *Three lecture and four laboratory hours a week, fall quarter.* Professor Ruark.

170. X-RAYS (5). Prerequisite, Calculus, Physics 53, 55, and 160, except by permission.

Optical properties of X-rays, absorption and scattering, X-ray spectra, energy levels, and transition probabilities; crystal structure determination with X-rays and electron waves; industrial applica-

tions. Text: Compton and Allison, *X-rays in Theory and Experiment.* (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Ruark.

Courses for Graduates

201. BOUNDARY PROBLEMS IN CLASSICAL PHYSICS (5). Prerequisite, Mathematics 141, 171; Physics 140, and either 101 or 110; Mathematics 221 is desirable.

Unified treatment of the partial differential equations of physics; their solution by orthogonal functions; potential theory; operational methods; integral equations. Text: Webster, *Partial Differential Equations of Mathematical Physics.* (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Ruark.

220. KINETIC THEORY (5). Prerequisite, Mathematics 141 or 171; Physics 120, except by permission.

Ideal gases, Maxwell's law, conduction in gases, viscosity, flow in tubes. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Plyler.

221. STATISTICAL MECHANICS (5). Prerequisite, Mathematics 141 or 171; Physics 101 or 110.

Classical and quantum statistics; applications of the latter; fluctuation phenomena. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Lyddane.

222. THERMODYNAMICS (5). Prerequisite, Mathematics 141; Physics 120, except by permission.

Continuation of Physics 120 with numerous applications. Free energy, Nernst heat theorem, equilibria, applications to solutions and systems with several variables. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Plyler.

240. THEORY OF ELECTRICITY AND MAGNETISM (5). Prerequisite, Mathematics 141; Physics 140, 141.

Solution of electrostatic problems by conjugate functions and spherical harmonics. Steady states and transients in networks and cables. The field equations; moving charges, radiation. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Ruark.

260. ATOMIC AND MOLECULAR STRUCTURE (5). Prerequisite, Calculus; Physics 53 (or 153); 101 or 110; 160, except by permission.

Experimental foundations of quantum mechanics; quantum interpretation of atomic spectra; general introduction to wave mechanics. Text: Ruark and Urey, *Atoms, Molecules, and Quanta.* (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Lyddane.

261. QUANTUM MECHANICS, PART I (5). Prerequisite, Mathematics 141; Physics 260. Mathematics 221 is desirable.

Perturbation theory; detailed study of many-electron atoms and of simple molecules; dispersion; susceptibilities; collision problems; matrices; transformation theory. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Lyddane.

262. QUANTUM MECHANICS, PART II (5). Prerequisite, Physics 261.

Statistical methods of treating atomic and molecular problems; relativistic quantum mechanics of the electron; further treatment of collision problems; absorption and emission of radiation; quantum theory of the electromagnetic field. Chief reference: *Heitler, Quantum Theory of Radiation.* (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Lyddane.

263. BAND SPECTRA (5). Prerequisite, Mathematics 141, Physics 160.

Experimental methods; theoretical study of diatomic and polyatomic molecules as revealed by molecular spectra; emphasis on infra-red spectra. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Plyler.

264. SPECTROSCOPY OF THE INFRA-RED (5). Prerequisite, Mathematics 141 and Physics 53.

Detailed study of experimental problems. (1941-1942 and alternate years.) *Two lecture and six laboratory hours a week, spring quarter.* Professor Plyler.

267. CURRENT ADVANCES IN PHYSICS (5). Prerequisite, Mathematics 141 and Physics 160.

Lectures and discussions on selected fields of physics which are advancing rapidly. (1941-1942 and alternate years.) *Five hours a week, fall or winter or spring quarter.* Professor Ruark or Professor Lyddane.

268. NUCLEAR PHYSICS (5). Prerequisite, Physics 160 and 161, except by permission.

Theory of artificial and radioactive disintegrations; gamma rays and positrons; nuclear energy levels; theory of nuclear structure. Reports on outside reading of recent research. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Ruark.

271. THEORY OF THE SOLID AND LIQUID STATES (5). Prerequisite, Mathematics 141; Physics 120.

The crystalline state; properties of metals from the standpoint of quantum statistics; spectra of liquids and solids. Debye-Hückel theory of electrolytes; problems and reports. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Lyddane.

301. RESEARCH (5 or more).

Under this heading may be credited the work of a single quarter or that of one or more years. Theoretical or experimental work on a subject approved by the departmental staff. Reading knowledge of German required. *Ten or more laboratory or computation hours a week, any quarter.* Professors Fussler, Plyler, Ruark, Stuhlman, Lyddane.

Note: advanced instruction in dynamics is provided by Mathematics 216 (Professor Hobbs), which may be taken for credit in either Mathematics or Physics.

DEPARTMENT OF PHYSIOLOGY

Isaac Hall Manning, Kenan Professor Emeritus.
H. Ward Ferrill, Associate Professor.
Harry Davis Bruner, Assistant Professor.
Augustus Taylor Miller, Jr., Instructor.

Graduate work in the Department of Physiology is offered to those interested in acquiring a more extensive knowledge of the various functions of the body. Physiology is fundamental to such biological sciences as medicine, biochemistry, parasitology, psychology; and graduate courses have been designed to supplement these major fields, as well as to give students an opportunity to undertake candidacy for the master's degree with a major in physiology.

A thorough undergraduate training in zoology, chemistry, and physics is essential and a reading knowledge of French or German is required.

The Department of Physiology is housed in the New Medical Building and has ample space and facilities for research. The library of the department is incorporated in that of the Medical School in the same building and contains a good selection of books and journals which may be supplemented by the library in zoology.

141. PHYSIOLOGY (5).

Study of the physiology of muscle, nerve, and circulation. Attention is called to pathological conditions which are commonly associated with disturbed functions of these systems, and which tend to emphasize the importance of the normal function. Open to medical students and others who have had the necessary prerequisite work. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee for non-medical students, $5.00.* Professor Ferrill.

142. PHYSIOLOGY (12). Prerequisite, Physiology 141.

Study of respiration, digestion, metabolism, excretions, the central nervous system, special senses, and endocrine glands. Open to medical students and other students with necessary prerequisite work. *Six lecture and twelve laboratory hours a week, spring quarter. Laboratory fee for non-medical students, $10.00.* Professor Ferrill.

201. ENDOCRINOLOGY (5). Prerequisite, Physiology 141 and 142.

This course is designed to acquaint the student with the functions of the various glands of Internal Secretion in health and disease. Where possible experimental cases of hypo- and hyperfunction of these organs will be developed in the laboratory. *Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Ferrill.

206. ADVANCED NEUROPHYSIOLOGY (5). Prerequisite, Physiology 141 and 142; Anatomy 101 or equivalent.

The course is designed to acquaint the student with the methods and significance of tests employed in clinical neurology. Emphasis is placed upon the physiologic mechanisms of central and peripheral activity of the Nervous System. The laboratory work covers acute experiments on the general subject of continuity of the nervous system. A limited number of experiments involves aseptic surgery. A term paper is required. *Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Bruner.

211. RESPIRATION, ACID-BASE BALANCE AND ELECTROLYTE DISTRIBUTION (5). Prerequisite, Physiology 141, 142; Biological Chemistry 102 and 103.

The lectures deal with the chemical and nervous control of breathing, the respiratory function of the blood, tissue respiration, the maintenance of acid-base equilibrium, and the distribution of water and electrolytes between blood cells and plasma and between blood and tissues. Laboratory experiments and demonstrations on selected topics. A term paper is required. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Dr. Miller.

301, 302, 303. RESEARCH IN PHYSIOLOGY (5 or more each).

Hours to be arranged with instructor. *Fall, winter, and spring quarters. Laboratory fee, $5.00.* Professors Ferrill, Bruner, Dr. Miller.

DEPARTMENT OF POLITICAL SCIENCE

William Whatley Pierson, Henry McGilbert Wagstaff, Edward James Woodhouse, Keener Chapman Frazer, Professors.

Ervin Hexner, Lecturer.

William Sumner Jenkins, Charles Baskervill Robson, Paul Woodford Wager, James William Fesler, Associate Professors.

Elwyn Arthur Mauck, Assistant Professor.

The Department undertakes to give advanced instruction in the structure, operation, history, and theory of governmental institutions. In this purpose, provision is made for training of a professional as well as a graduate nature in that courses are offered which would be of benefit to those preparing for the civil service, domestic and foreign. Graduate programmes may be arranged in local and national government—county, municipal, state, and federal—in constitutional law and historical jurisprudence, in public administration and legislation, in international law and relations, in comparative government, and in political theory. For each of these fields, a sufficient and a constantly expanding body of library and research materials is available. The Department and the Library have acquired over the past several years important collections of state session laws and journals. Some gaps in these collections have been bridged by micro-film copies of documents which could not be acquired in original form.

The Department will cooperate with the Departments of History, Economics, Education, Social Work, and Sociology and with the School of Law in meeting the interests of students.

The Department is located in Caldwell Hall, occupying the first floor and part of the second floor of the main building. Conference and seminar rooms are supplied, and space is provided for the Southern Council on International Affairs and the Carolina Political Union.

Courses for Graduates and Advanced Undergraduates

Note: Political Science 31-32-33 or 41-42 or 51 are prerequisite for each of the following courses.

101. PUBLIC ADMINISTRATION (5).

General problems and principles of public administration. Structural problems: the separation of powers, organization of administrative agencies, areal problems of administration. Personnel problems: recruitment, promotion, removal, classification, civil servant

unions. Financial problems: budgeting, auditing, purchasing, taxing, borrowing. Administrative laws: growth and significance of administration legislation and adjudication. *Five hours a week, fall quarter.* Professors Fesler, Mauck.

121. THE GOVERNMENT OF ENGLAND (5).

The objective in this course is a knowledge of the development and operation of the English government. Local, national, and imperial aspects of England's governmental practice will receive attention. Resemblances and contrasts between her government and that of our own country will be pointed out for the practical lessons which the parallel supplies. Lectures and readings. *Five hours a week, fall quarter.* Professor Wagstaff.

122. GOVERNMENT AND ADMINISTRATION OF EUROPEAN CITIES (5).

A general consideration of principles and methods of social control in the municipalities of Great Britain, France, and Germany, with some attention to those of other nations. Comparisons with American conditions. *Five hours a week, spring quarter.* Professor Woodhouse.

123. COMPARATIVE GOVERNMENT (5).

A comparative study of the principles, structure, and operation of the governmental systems of the world, with special attention to those of continental Europe. *Five hours a week, winter quarter.* Professors Robson, Hexner.

132. AMERICAN MUNICIPAL GOVERNMENT (5).

An historical survey of the development of governmental structure, theory, and functions in American municipalities, and careful analysis of existing municipal conditions, with special attention to city and town government in North Carolina. Each student will make an intensive study of his own or some other city or town. *Five hours a week, fall quarter.* Professor Woodhouse.

133. AMERICAN MUNICIPAL ADMINISTRATION (5).

Special study of the principles and problems of administration in American municipal corporations, of such functions as police, public education, charities and correction, local improvements, public health, finances, with emphasis on city and town administration in North Carolina. Each student will select and study exhaustively a municipal problem in one municipality. *Five hours a week, winter quarter.* Professor Woodhouse.

134. COUNTY GOVERNMENT AND ADMINISTRATION (5).

A study of the forms of organization, the functions, and the operation of County Government in the United States and especially in North Carolina in their historical development, but with special emphasis on present conditions and tendencies and on possible improvements. Each student will be required to study, as extensively and as intensively as possible, the government and administration of one county, preferably his home county, and to put his results into essay form. Textbooks, lectures, readings. *Five hours a week, winter quarter.* Professor Wager.

141. INTRODUCTION TO INTERNATIONAL LAW (5).

A general survey of the history, the sources, and the content of international law. *Five hours a week, fall quarter.* Professor Frazer.

142. INTERNATIONAL ORGANIZATION AND INSTITUTIONS (5).

A study of important international governmental institutions. The administrative unions, the League of Nations, and the international courts are examined and discussed. Lectures, readings, reports. *Five hours a week, winter quarter.* Professor Frazer.

144. THE ORGANIZATION AND CONDUCT OF THE FOREIGN RELATIONS OF THE UNITED STATES (5).

The machinery of foreign relations, organs for conduct, and the foreign service are analyzed and discussed. Foreign policies are discussed from the standpoint of their formulation and content. *Five hours a week, spring quarter.* Professor Frazer.

145. PRIVATE INTERNATIONAL LAW (5). Prerequisite, Political Science 141 or the equivalent.

This course is concerned with the legal practice controlling situations in which private persons are affected by the conflict between the laws of different national states. The practice of the several nations is studied in this connection, and illustrated by cases. *Five hours a week, spring quarter.* Professor Frazer.

151-152. THE ELEMENTS OF POLITICAL SCIENCE (10).

A general course in which a study is made of the principles of political science and of the important theories respecting the nature, origin, forms, and ends of the state and of government. An examination of the literature of the subject will be made, supplemented by students' reports on selected political theorists. Lectures, textbooks, readings. *Five hours a week, fall and winter quarters.* Professor Pierson.

154. DEVELOPMENT OF THE ENGLISH CONSTITUTION (5).

A general course surveying the origin and development of the constitutional machinery of the British monarchy. Emphasis will be laid on the successive constitutional landmarks from the Norman Conquest to the Parliament Act of 1911. Lectures, textbooks, readings. *Five hours a week, winter quarter.* Professor Wagstaff.

155. THE CONSTITUTION OF THE UNITED STATES (5).

An elementary course in constitutional law covering by means of lectures, textbooks, and cases the fundamental principles of constitutional interpretation and practice in the United States. *Five hours a week, winter quarter.* Professor Jenkins.

156. CONTEMPORARY PROBLEMS IN GOVERNMENT (5).

A study of the present organizations and actual operations of our national and state governments through the day to day acts of their departments as reported in the *United States Daily,* other newspapers, periodicals, and available official reports. Lectures, readings, reports. *Five hours a week, winter quarter.* Professor Woodhouse.

157. HISTORICAL JURISPRUDENCE I (5).

Ancient and medieval law; brief study of Egyptian, Babylonian, Greek, and Hebrew law, chiefly in their methods and agencies of formulation and administration; detailed study of the historical evolution of Roman law, of its fate during the Middle Ages, and of its spread and influence in the Modern World; some consideration of the parts played in medieval Europe by the Germanic, Slavonian, and Celtic legal systems. *Five hours a week, winter quarter.* Professor Woodhouse.

158. HISTORICAL JURISPRUDENCE II (5).

Anglo-American law; historical study of the development of English law, legislation, courts, and court procedure from the Anglo-Saxon Conquest of England to the settlements in North America by the English; and of the evolution of the legal system in these English colonies and in the United States to the present day. *Five hours a week, spring quarter.* Professor Woodhouse.

159. THE BRITISH EMPIRE (5).

The building and development of the British Empire from 1783 to the present, with emphasis laid on governmental machinery. *Five hours a week, fall quarter.* Professor Wagstaff.

165 (153). POLITICAL THOUGHT OF THE EIGHTEENTH CENTURY (5).

An analysis of political thought and philosophy, 1750-1800. Emphasis will be placed on the study of the philosophical ideas of the American and French Revolutions. Lectures and reports. *Five hours a week, winter quarter.* Professor Pierson.

166. POLITICAL THOUGHT OF THE NINETEENTH CENTURY (5).

An analysis of the development of the theory of constitutional democracy together with an examination of the principal lines of criticism of that form of government which were presented in the century. *Five hours a week, spring quarter.* Professor Robson.

175. POLITICAL PARTIES AND PUBLIC OPINION (5).

History, organization, and policies of major and minor parties; nominating systems; ballot and election laws; party finance, political machines; influence of party upon executive and legislative branches of government. Special emphasis upon the relation of party to administration and to current American politics. Lectures, readings, reports. *Five hours a week, fall quarter.* Professor Woodhouse.

181. GOVERNMENTAL REORGANIZATION IN THE UNITED STATES SINCE 1929 (5).

The governmental problems faced by the New Deal, and the solutions attempted through the NRA, AAA, RFC, TVA, and similar agencies. Particular attention will be devoted to administrative aspects of the New Deal: conflicts of policy among the new agencies, growth of governmental corporations, recruiting of personnel, budgetary problems, and the increased delegation of legislative power to administrative agencies. *Five hours a week, spring quarter.* Professor Fesler.

185. FINANCIAL ADMINISTRATION (5). Prerequisite, Political Science 101.

A treatment of the fiscal aspects of public administration, including not only the assessment and collection of taxes, but also control of expenditures. Attention will be given to public purchasing, custody of funds, debt administration, budgets and audits. *Five hours a week, winter quarter.* Professor Wager.

191. PUBLIC FINANCE (Same as Economics 141.) (5).
Five hours a week, fall quarter. Professors Heer, Kilpatrick.

192. PROBLEMS IN FEDERAL FINANCE (Same as Economics 142.) (5).
Five hours a week, winter quarter. Professors Heer, Kilpatrick.

193. PROBLEMS IN STATE AND LOCAL FINANCE (Same as Economics 143.) (5).
Five hours a week, spring quarter. Professors Heer, Kilpatrick.

197. GOVERNMENT AND BUSINESS (Same as Economics 197.) (5).
Five hours a week, spring quarter. Professor Hobbs.

Courses for Graduates

210. PUBLIC ADMINISTRATION OF RESOURCES (5). Prerequisite, a basic course in Economics or Government.

A course devoted mainly to an analysis of the way in which publicly-owned resources are being administered by federal, state, and local governments. Among the subjects treated are: alienation of the public domain; the conservation movement; acquisition of a new public domain; and the work of agencies administering land, water, forest, mineral, wild life, and recreational resources. Some attention will be given also to planning agencies and regulation of the use of private land. *Five hours a week, spring quarter.* Professor Wager.

221. ADMINISTRATIVE LAW (5).

A study of the growth of legislation and adjudication by administrative agencies; its relation to the traditional theory of separation of powers; the extent of judicial control over administrative action in such fields as utility regulation, taxation, the exclusion and expulsion of aliens. Reports on particular administrative agencies. *Five hours a week, winter quarter.* Professor Fesler.

225. PUBLIC PERSONNEL ADMINISTRATION (5).

Designed primarily for students planning to enter the public service, the course will intensively investigate the problems of public personnel administration. Particular emphasis will be placed on policies and techniques of recruitment, classification, compensation, promotion, transfer, separation, provision of satisfactory working conditions, and organization of the personnel agency. *Five hours a week, spring quarter.* Professor Fesler.

231. THE LEGISLATIVE PROCESS (5).

A course dealing with the theory and practice of legislation in the United States, with a comparative study of law-making in the governments of other countries. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Jenkins.

235. THE JUDICIAL PROCESS (5).

A study of the theory and practice of courts of justice in America and in English speaking countries. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Jenkins.

241. INTERNATIONAL LAW (5).

The materials of international law will be examined. Leading cases, treaties, and international legislative acts constitute the subjects of study. *Five hours a week, winter quarter.* Professor Frazer.

251. HISTORY OF FISCAL DOCTRINES (Same as Economics 241.) (5).

Five hours a week, spring quarter. Professor Heer.

301abc. MODERN INTERNATIONAL RELATIONS (9).

Seminar. An analysis will be made of the major problems of international relations. Emphasis will be placed upon the elements of nationalism and internationalism, imperialism, and the settlement of international disputes. *Conferences, two hours a week, fall, winter, and spring quarters.* Professor Frazer.

305. SEMINAR IN COUNTY ADMINISTRATION (5). Prerequisite, Political Science 134, or two other courses in Political Science.

Research, reading, and conferences on special phases of county organization and administration. *Five hours a week, fall or winter or spring quarter.* Professor Wager.

311abc. AMERICAN POLITICAL THEORY (9).

A seminar course respecting the political philosophy that has been developed in the United States. In the fall quarter the political theory of the colonial period and the American Revolution will be studied; in the winter quarter attention will be given to the theories associated with the formation of the Constitution and its early interpretation, the nature of the Union, and the slavery dispute; in the spring quarter the political theory of the Civil War and the contemporary United States will be considered. Lectures, readings, reports. *Conferences, three hours a week, fall, winter, and spring quarters.* Professor Pierson.

321abc. STATE AND LOCAL GOVERNMENT (9).

Seminar course respecting the various functions, organs, and problems of public administration in the States and in their subdivisions. Comparison of various attempts to reorganize the state administrative system. *Conferences, three hours a week, fall, winter, and spring quarters.* Professor Woodhouse.

341. SEMINAR COURSE (5).

A research course in a special field under the direction of a member of the department.

DEPARTMENT OF PSYCHOLOGY

John Frederick Dashiell, Harry Wolven Crane, English Bagby, Professors.
Robert James Wherry, Associate Professor.
Abram Gustavus Bayroff, Assistant Professor.

The staff and facilities of the Department are now adequate to offer training in all the recognized general avenues of psychological work: experimental, clinical, statistical, theoretical.

The courses listed for graduates are selected with the aim of providing such as will be intensive and extensive preparation in "pure" psychology, as well as in some applied lines. Interests in applied psychology in its varied forms—educational, economic, legal, social, medical, etc.—are also recognized by many courses.

On the first floor of the New West Building are located classrooms, the elementary laboratory, and private offices. On the second floor are arranged a library, a seminar room, a large class laboratory, rooms for clinical examinations, supply rooms, a shop, and offices. Space on the third floor is planned especially for research: at one end small private rooms for human problems, at the other, room for animal problems. A long dark room is available. The building is piped throughout for water and gas, and electric supplies of both alternating and direct current in low and high voltages are made available at numerous outlets. The technical equipment includes sufficient duplication of apparatus for the laboratory work in the various courses, a fairly complete stock of standard apparatus for advanced training in experimental and statistical methods, and sufficient apparatus and funds for the prosecution of research along most of the recognized psychological lines. The departmental library includes all the technical journals published in English and a few in other languages. The supply of books is fairly complete.

Courses for Graduates and Advanced Undergraduates

Note. Psychology 21-22-23 or their equivalent are prerequisite for each of the following courses.

125. ANIMAL BEHAVIOR (5).

A survey of behavior in the various phyla, followed by a critical survey of experimental problems concerning vertebrates, including man. The course is of general character, emphasizing central concepts; adjustment, reflexes, learning, motivation, insight, etc. *Four lecture and two laboratory hours a week, fall quarter. Laboratory fee, $2.00.* Professor Bayroff.

126. CHILD DEVELOPMENT (5).

A survey of experimental and clinical contributions to the contemporary field of child development, including foetal, neonate, preschool, school, and adolescent ages. *Four lecture and two laboratory hours a week, spring quarter. Laboratory fee, $1.50.* Professor Dashiell.

130. ELEMENTARY PSYCHOLOGICAL STATISTICS (5).

Measures of distribution, reliability, simple correlation, and regression. Training given in graphic work and use of statistical machines. The use and misuse of statistical methods in handling psychological problems are stressed. *Three lecture and four laboratory hours a week, fall quarter. Laboratory fee, $1.00.* Professor Wherry.

135. ECONOMIC PSYCHOLOGY: PERSONAL AND PUBLIC RELATIONS (5).

Psychological problems of business and industry as they relate to the employer, the employee, and the public. An intensive survey of problems, prediction, and control. *Four lecture and two laboratory hours a week, spring quarter. Laboratory fee, $1.50.* Professor Wherry.

138. LEGAL PSYCHOLOGY (5).

A natural science approach to major problems of a psychological nature with which the law is concerned. (1941-1942 and alternate years.) *Five hours a week, spring quarter. Laboratory fee, $2.00.* Professor Dashiell.

144. MENTAL HYGIENE (5).

A genetic approach to problems of adult behavior, including sources of faulty and of adequate behavior in relation to factors found in infancy, preschool, school, and adult periods. Direct applications to problems of the social service worker. *Five hours a week, fall quarter.* Professor Crane.

145. ABNORMAL PSYCHOLOGY: FEEBLE-MINDEDNESS (5).

Presentation of the psycho-neural aspects of feeble-mindedness, together with their importance to education, dependency, and delinquency. (1940-1941 and alternate years.) *Five hours a week, winter quarter. Laboratory fee, $1.00.* Professor Crane.

146. ABNORMAL PSYCHOLOGY: PSYCHONEUROSES AND PSYCHOSES (5).

The sensory, imaginal, emotional, motor, etc., abnormalities and the occurrence of these in the various psychoses. Brief surveys of methods of clinical psychology and of psychotherapy. *Five hours a week, spring quarter. Laboratory fee, $1.00.* Professor Crane.

147. ABNORMAL PSYCHOLOGY: METHODS OF MENTAL EXAMINATION (5).

A presentation of the various psychological methods used in the clinical study of individuals, including specialized defects as well as the level of intelligence. *Four lecture and two laboratory hours a week, winter quarter. Laboratory fee, $3.00.* Professor Crane.

151, 152, 153. ORIGINAL PROBLEMS (5 each).

To the student who finds himself especially interested in some particular problem of psychology, opportunity is here offered for investigative study. May be elected any quarter, and for one, two, or three quarters. *One lecture and eight laboratory hours a week, fall or winter or spring quarter. Laboratory fee, $3.00 a quarter.* Professors Dashiell, Crane, Bagby, Wherry, Bayroff.

191. HISTORICAL SURVEY OF PSYCHOLOGY (5). Prerequisite, undergraduate major in Psychology.

The sources of modern psychology are traced from early Greek thinking through the 16th and 17th centuries; and emphasis is then placed on experimental, clinical, and theoretical developments of the 19th century. Readings in sources, especially Wundt, Ebbinghaus, Galton, Janet, James. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Dashiell.

192. CONTEMPORARY TRENDS IN PSYCHOLOGY (5). Prerequisite, undergraduate major in Psychology.

A systematic review is made of recent American and European treatments of psychological problems. Readings in Titchener, Watson, Freud, Jung, Köhler and Koffka, Lewin, Spranger, Klages, and others. The great theoretical system will receive major but not exclusive attention. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Dashiell.

Courses for Graduates

201, 202. EXPERIMENTAL METHODS AND PROCEDURES (5 each).

This course surveys the principal lines of psychological experimentation, and training in laboratory procedures. Course 201: psychophysics, sensory qualities, perception, attention, reaction time, feeling, and emotion. Course 202: acquisition of skills, memorizing, conditioning, problem solving, thought, fatigue, and efficiency. (Courses 201 and 202 to be offered in alternate years.) *One lecture and eight laboratory hours a week, winter quarter. Laboratory fee, $3.00.* Professors Dashiell and Bayroff.

205. PHYSIOLOGICAL PSYCHOLOGY (5).

An intensive study is made. Emphasis is placed upon the neural mechanism as a basis of understanding both the mental and the reaction phenomena of psychology. (1940-1941 and alternate years.) *Equivalent of five hours a week, winter quarter. Laboratory fee, $3.00.* Professor Crane.

208. SOCIAL PSYCHOLOGY (5).

A brief historical survey is followed by an attempt to identify the psychological processes underlying the more important social phenomena. Pertinent experimental work is examined. Following this the social factors in individual personality development are considered. *Five hours a week, spring quarter.* Professor Bagby.

230. ADVANCED PSYCHOLOGICAL STATISTICS (5).

Intensive studies of analysis by correlation, techniques for selection, criteria, reliability, and curve fitting. For students interested in advanced statistical research. *Three lecture and four laboratory hours a week, winter quarter. Laboratory fee, $1.00.* Professor Wherry.

234. MATHEMATICAL PSYCHOLOGY (5).

A survey of psychophysical methods, sensation theories, measurement of attitudes, factor analysis, learning and growth curves, topology and mathematical biophysics. *Three lecture and four laboratory hours a week, spring quarter.* Professor Wherry.

251, 252, 253. RESEARCH IN PSYCHOLOGY (5 each). Prerequisite, Psychology 201 or 202.

Opportunity for the experimental investigation of special problems along the line of the individual students' interests. *Ten laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $3.00 a quarter.* Professors Dashiell, Crane, Bagby, Wherry, Bayroff.

325. SEMINAR (5).

An advanced course devoted to the extensive or intensive survey of current or of historical material bearing upon some limited problem or field of psychology. The problem studied will be varied from year to year. *Five hours a week, fall or winter or spring quarter, to be specially announced.* Professors Dashiell, Wherry, Bayroff.

341-342. ADVANCED RESEARCH (10).

Experimental or clinical research to be done by advanced graduate students only. *Ten laboratory hours a week, any two quarters.* Professors Dashiell, Crane, Bagby, Wherry, Bayroff.

The student is referred also to courses in educational psychology and to courses in neurology and physiology, listed in other departments of the University.

DIVISION OF PUBLIC HEALTH

Milton Joseph Rosenau, Herman Glenn Baity, Daniel Allan MacPherson, Harold William Brown, James Clarence Andrews, John William Roy Norton, Professors.

William LeRoy Fleming, Daniel Franklin Milam, John Joseph Wright, Research Professors.

Michael Arendell Hill, Jr., Associate Professor.

Harold Benedict Gotaas, Assistant Professor.

GENERAL STATEMENT

Graduate degrees offered by the Division of Public Health are administered by the Graduate School of the University of North Carolina. These degrees are: Master of Public Health (M.P.H.), Doctor of Public Health (Dr.P.H.), Master of Science (with designation) (M.S.), Doctor of Philosophy (with designation) (Ph.D.).

All requirements concerning these degrees are administered by an Administrative Committee of the Graduate Division of Public Health with the approval of the Administrative Board of the Graduate School.

The object of the Division is to provide the scientific ground work which underlies public health administration. To this is added some acquaintance with modern public health procedures of a selective type. The program includes lectures, sanitary surveys in the field, various exercises and laboratory work by members of the faculty, supplemented by special instructors actively engaged in public health problems. Students may select the courses in their curriculum to prepare themselves for careers in teaching, administration, field or laboratory positions. Special opportunity is offered to those who desire to contribute knowledge through laboratory research or field investigations.

The University of North Carolina, at Chapel Hill, has been designated by the United States Public Health Service as the center for the training of health officers for the Interstate Sanitary District No. 2, extending from Delaware to Florida, to carry out the provisions of the Social Security Act for the training of public health personnel.

The Division of Public Health enjoys the active cooperation of the State Department of Health at Raleigh. Members of the staff give exercises in their special fields and the students have the opportunity to see the practice and study the

methods and material of an efficient State Health organization at first hand.

Cooperation is also maintained with Duke University and its Hospital, as well as with Watts Hospital, in Durham. Furthermore, we enjoy the cooperation of the local health officer at Durham, who, through lectures and practical demonstrations, gives the student an opportunity to see the health work of a city government, where, as well as at Raleigh, opportunity is offered for special study and investigation of health problems.

For county health work a Field Demonstration Unit has been established in the Orange-Person-Chatham District Health Unit for the purpose of giving trainees practical experience in rural health administration.

Courses for Graduates and Advanced Undergraduates

NOTE: Figures in parenthesis are those previously employed for similar or identical courses.

P.H. 111 (101). PUBLIC HEALTH ADMINISTRATION (3).

The theory of public health administration is developed by a study of the administrative methods actually employed in various governmental units including the federal government, states, municipalities, and counties. Certain phases of public health administration are covered by special lecturers who are invited from time to time to cover those particular fields upon which they can speak with authority.

Some time is given to proper procedures in the administrative control of the more important communicable diseases such as tuberculosis, venereal diseases, diphtheria, pneumonia, measles, whooping cough, meningitis, typhoid fever, intestinal parasites, rabies, and malaria.

Each physician taking the course is required to make a comprehensive public health survey of some assigned local health organization according to an outline supplied him, and supervised field trips are arranged for an afternoon each week.

Each student compiles his own text book during the course, using a loose leaf system. The notes on the lectures are supplemented by pamphlets, reprints, forms, and references to specific phases of the work, so that at the end of the course the student has the nucleus for a public health reference library which can be enlarged upon from year to year. *Three lecture hours a week, fall quarter.* Professor Norton; special lecturers.

P.H. 113. CHILD HYGIENE (3).

A broad outline of the various aspects of maternal-child health is presented and the specific local and general problems discussed; premarital considerations; marriage; conception hygiene; prenatal, delivery and postnatal care; neonatal and infant, preschool, and school health programs. Special protection with regard to growth and development, nutrition, mental hygiene, health appraisal and adolescence are considered. Visits are made to prenatal, infant and preschool, school, nutrition, mental hygiene, dental, and crippled

children's clinics. Special emphasis is placed on the handling of problems in which preventive efforts of public health and cooperating agencies can be made particularly effective. *Three lecture hours a week, winter quarter.* Professor Norton; special lecturers.

P.H. 121 (141). VITAL STATISTICS (2).

The lectures outline methods of vital registration, the participation of local health departments in recording births and deaths, and the value of these records when properly used. Methods are presented for collecting, tabulating, adjusting, and drawing sound conclusions from statistical data regarding human life. Methods of graphic presentation of statistical data are studied, with special emphasis on their use by the county health officer and other members of the public health department staff. The calculations include estimations of population, rates and ratios, and simple correlation. Laboratory work furnishes the student an opportunity to apply the principles covered by the lectures. *One lecture and two laboratory hours a week, fall quarter.* Professor Norton; special lecturers.

P.H. 122. MATHEMATICAL STATISTICS (5).

This is an advanced course in statistical methods (same as Mathematical Statistics 111) intended for those showing particular aptitude in Vital Statistics 121 and for those planning to specialize in the handling of statistical and observational data. The course deals with the elementary theory and applications of mathematical statistics to various medical and public health activities, treating in detail the following topics: graphs, averages, dispersion, skewness, sampling, probable error, frequency curves, and correlations. *Five hours a week, winter quarter.* Professor Hill.

P.H. 131 (122). COMMUNICABLE DISEASES (3½). Prerequisite, General Zoology 41, 42.

Lectures, demonstrations, and practical laboratory work on the common communicable diseases. Emphasis is placed upon laboratory diagnosis, modes of transmission, and means of prevention. The laboratory work consists of the identification and study of the various organisms responsible for disease including filtrable viruses, rickettsia, bacteria, spirochetes, protozoa, and helminths. For sanitary engineers, sanitarians, and sanitary officers. *Two lecture and three laboratory hours a week, fall quarter.* Professor Brown.

P.H. 151. PUBLIC HEALTH LABORATORY METHODS (2½).

Lectures, discussions, and practical laboratory work in the diagnosis of diseases of public importance for health, such as scarlet fever, diphtheria, tuberculosis, whooping cough, pneumonia, typhoid fever, bacillary and amoebic dynsentery, brucellosis, gonorrhea, syphilis, rabies, malaria, and hookworm. Insect vectors are examined, and simple classification of mosquitoes attempted. The preparation, standardization, and use of biological products are discussed, and the student performs Shick, Dick, Widal, Wassermann, and Kahn tests. Emphasis is placed on proper taking of specimens, principles involved in diagnosis, and interpretation of results. *One lecture and three laboratory hours a week, fall quarter.* Professor MacPherson.

P.H. 161 (111). THE PRINCIPLES OF SANITATION (5).

A general survey course consisting of lectures, demonstrations, laboratory exercises, and field visits, designed to meet the needs of

students preparing to engage in public health activities. The following subjects receive attention: historical and epidemiological background of sanitation; sanitary surveys; rural sanitation; water supply, purification, and distribution; sewerage, sewage treatment, and stream pollution; laboratory analysis of water, sewage, and industrial wastes; malaria control; illumination; plumbing; food sanitation; milk sanitation; shellfish sanitation; collection and disposal of garbage and refuse; sanitation of schools, camps, and bathing places; heating, ventilation, and air conditioning. *Three lecture and four laboratory hours a week, fall quarter.* Professors Baity, Gotaas; visiting lecturers.

P.H. 162. SANITARY CHEMISTRY I (5). Prerequisite, Chemistry 1, 2, 3, or equivalent.

A study of the principles of general, qualitative, and quantitative chemistry and their application to the procedures for the analysis for dissolved gases, organic and mineral content, and the physical properties of water, sewage, and industrial wastes; the origin of various chemical constituents and their interpretations. *Two lecture and six laboratory hours a week, fall quarter.* Professor Gotaas.

P.H. 163. SANITARY CHEMISTRY II (5). Prerequisite, Chemistry 1, 2, 3, or equivalent.

Principles of physical chemistry and biological chemistry and their relation to environmental sanitation; water and sewage bacteriology: chemical and biological investigations of water and sewage. *Two lecture and six laboratory hours a week, winter quarter.* Professors Baity, Gotaas.

P.H. 164. SANITARY CHEMISTRY III (5). Prerequisite, P.H. 163 or equivalent.

The study of the principles of physical, colloidal, and biological chemistry and their application to problems in sanitary engineering. Experimental problems and investigations for the control and operation of sanitary works. Laboratory tests of plant reagents and special chemical tests of water and sewage. The student may devote part of the laboratory time to the investigation of a special problem in which he is interested. *Two lecture and six laboratory hours a week, spring quarter.* Professors Baity, Gotaas.

Courses for Graduates

P.H. 201. EPIDEMIOLOGY I (5).

A general course covering the more important facts on which scientific and sound public health administration is based.

PART I. Lectures and demonstrations covering the epidemiology of the important diseases, the laws of epidemics, principles of prevention, modes of infection, water-, milk-, and insect-borne diseases, seasonal prevalence, disinfection and quarantine, vaccination and immunity, illustrative epidemics and the management of an epidemic campaign. Each student makes a special study of the epidemiology of one disease which is summarized in a paper.

Practical field work in this course is done under the direction of the North Carolina State Board of Health in the Orange-Person-Chatham District and the Durham City-County Health Departments. Immediate supervision of field work is under the guidance of the local health officers.

This is the first half of the course in Epidemiology which is concluded in Part II in the winter quarter. The course is divided in two parts without repetition. *Five hours of lectures, demonstrations, and seminars a week, fall quarter.* Professor Rosenau.

P.H. 202. EPIDEMIOLOGY II (5).

PART II. A continuation of Epidemiology 201.
Five hours of lectures, demonstrations, and seminars a week, winter quarter. Professor Rosenau.

P.H. 204. CLINICAL COMMUNICABLE DISEASE (2½). Prerequisite, Degree in Medicine.

Lectures, demonstrations, ward rounds, and visits to patients with communicable diseases. The early diagnosis of communicable diseases is stressed. Demonstrations are given of home isolation and nursing. With the cooperation of the State Sanatorium exercises are given on the Clinical and X-ray diagnosis of tuberculosis and methods of treatment. *One lecture and three hours of ward work, winter quarter.* Professor Brown; special lecturers.

P.H. 205. NUTRITION (3).

This course consists of a series of lectures dealing with the known dietary essentials, their chemical nature, distribution in nature, and the diseases resulting from their lack. Special emphasis is given to discussion of practical food sources of the various dietary essentials. Visits and ward rounds are made to hospitals and other institutions where clinical experience with deficiency disease may be obtained. *Three lecture hours and demonstrations a week, spring quarter.* Professor Andrews.

P.H. 206. SYPHILIS CONTROL METHODS (2½). Prerequisite, Degree in Medicine.

This course reviews the clinical, epidemiological aspects, and control measures of syphilis. Practical work in diagnosis and treatment are secured in the clinics at Watts Hospital in Durham and the Orange-Person-Chatham District Health Department and the Durham City-County Health Department. *One lecture hour and three hours of clinic work a week, fall quarter.* Professor Fleming.

P.H. 207, 208, 209. SYPHILIS CONTROL (3-5 a quarter). Prerequisite, Degree in Medicine.

A limited number of students intending to make syphilis their major field of work may register for the degree of Master of Public Health and devote considerable time to the subject. The course will include instruction in clinical syphilis, supervised work in public health clinics, and training in epidemiologic methods. The facilities of a special clinic, several public health clinics, and the local joint Rockefeller Foundation-State Board of Health syphilis epidemiologic project will be utilized. *One lecture or seminar hour and four to eight clinic hours a week, fall, winter, and spring quarters.* Professor Fleming.

P.H. 210. NUTRITION PROBLEMS (2). Prerequisite, college degree.

This course is designed to introduce the student to the recent developments in the field of human nutrition. Newer methods of vitamin assay are demonstrated. Examples of the various deficiency diseases in adults and children will be demonstrated in hospital

wards and in the field where nutritional research is in progress. *One lecture and two laboratory hours a week, spring quarter.* Professor Milam.

P.H. 211. PUBLIC HEALTH ADMINISTRATION (5).

This course is especially designed for the director of local health work. State and local public health problems of the Southeastern States are particularly stressed. Program planning, budget operation, relationships with cooperating official and non-official agencies, coordination of private and public health medical activities, health education, and similar problems which are handled by the health officer are studied. Weekly field trips are arranged to study the practical operation of different plans according to varying local needs. *Three lecture and four or more field trip hours a week, spring quarter.* Professor Norton; special lecturers.

P.H. 231. MEDICAL PARASITOLOGY (3½). Prerequisite, Communicable Diseases 131 or General Zoology 41 and 42.

Lectures, demonstrations, field trips, and laboratory work upon the animal parasites of man. Special emphasis is placed upon the diagnosis of the presence of the parasites, their life cycles, and measures for control. Training is given in the identification of the various arthropod vectors of human disease. The laboratory diagnosis of malaria is stressed and consideration is given the biology and identification of the important mosquitoes of Southern United States. *Two lecture and three laboratory hours a week, winter quarter.* Professor Brown.

P.H. 232. PARASITOLOGICAL METHODS (5). Prerequisite, Medical Parasitology 231.

A consideration of the methods employed in parasitological study. Life cycles of the various animal and human parasites are carried out in experimental animals. The methods of preservation and mounting of parasites are studied and each student builds up his own collection. The techniques involved in the field studies of the various human parasites are considered. Mosquito surveys are made and special emphasis placed upon the identification and the biology of the *genus anopheles.* Each student builds up a personal reprint library in connection with the various problems studied. *Three lecture and six laboratory hours a week, spring quarter.* Professor Brown.

P.H. 233. MALARIOLOGY (5). Prerequisite, Communicable Diseases 131 or General Zoology 41 and 42 or equivalent.

Lectures, demonstrations, and laboratory devoted to the study of malaria in man and mosquito and methods of its control. The biology and classification of mosquitoes are considered, special attention being given to the species that transmits malaria. Each student participates in field work which includes a blood and spleen survey in a malarious area. Correlated with this is a mosquito survey of the same area. The specimens and data collected in the field are used for laboratory exercises. The control of malaria is discussed and field projects are visited. The student is instructed in the various engineering methods of mosquito eradication and control, and several laboratory periods are devoted to such subjects as mapping, surveying, drainage design, dusting, oiling, and screening. *Three lecture and four laboratory hours a week, spring quarter.* Professors Brown, Baity.

P.H. 261. MILK AND FOOD CONTROL (3). Prerequisite, P.H. 201, P.H. 131, P.H. 161.

Principles of milk and other food sanitation. Public health supervision and control of the production, processing, and distribution of milk and other foods. Lectures, field and laboratory work. *Two lecture and three laboratory hours a week, winter quarter.* Professor Baity; visiting lecturers.

P.H. 262. LIMNOLOGY, RHEOLOGY, STREAM POLLUTION (5). Prerequisite, P.H. 162 and 163.

A study of the principles of limnology, rheology, and fresh water ecology, as they apply to water supply, sewage disposal, and insect control. Emphasis is placed on the physical, chemical, and biological factors of the aquatic environment, the identification and control of organisms common to reservoirs, stream pollution and self purification, the control of streams from the viewpoint of the public health and conservation, and the control of insects. *Three lecture and four laboratory hours a week, spring quarter.* Professor Baity.

P.H. 271. HYDROLOGY (3).

A study of meteorology, rainfall, stream flow, storage, and floods; and the analysis of data using statistical and probability methods *Three lecture hours a week, winter quarter.* Professor Gotaas.

P.H. 272. WATER SUPPLY AND SEWERAGE (5). Prerequisite, Hydraulics, Math. 124, Strength of Materials, Math. 123.

The study of water consumption, sources of supply, drainage areas, and ground water development and control, storage and distribution of water and their relation to the welfare of the community. The study of sewerage facilities, sewage flow, storm water drainage, and separate and combined sewers and their importance to the protection of the public health. *Three lecture and four laboratory hours a week, fall quarter.* Professor Gotaas.

P.H. 273. WATER PURIFICATION (5). Prerequisite, P.H. 272 and P.H. 162; corequisite, P.H. 163.

The theory and principles of aeration, coagulation, sedimentation, softening, deferrization, odor and taste removal, water plant management, and their application to the design and operation of water purification plants for the supply of a safe and potable water for municipal and rural communities. *Four lecture and two laboratory hours a week, winter quarter.* Professors Baity, Gotaas.

P.H. 274. SEWAGE TREATMENT AND WASTE DISPOSAL (5). Prerequisite, P.H. 273; corequisite, P.H. 164.

The nature and characteristics of sewage and industrial wastes which affect public health or create an undesirable public nuisance. A study of the principles of screening, grit removal, sedimentation, chemical precipitation, filtration, aeration, disinfection, aerobic and anaerobic decomposition, sludge treatment and disposal, and their application to the design and operation of treatment facilities. The treatment and disposal of solid industrial and municipal refuse is also considered. *Four lecture and two laboratory hours a week, spring quarter.* Professors Baity, Gotaas.

P.H. 281. INDUSTRIAL HYGIENE AND SANITATION (5). Prerequisite, P.H. 162, P.H. 163, or equivalent.

A study of the relation of the industrial environment to the health, efficiency, and welfare of workers, including the following

topics: industrial accidents, atmospheric impurities, occupational diseases, adverse temperatures and humidities, illumination, factory sanitation and inspection, and industrial legislation. The laboratory period will be devoted to the procedures used in the determination and interpretation of adverse working conditions, including physical properties of air and atmospheric impurities, and visits to factories. *Three lecture and four laboratory hours a week, spring quarter.* Professor Gotaas; other members of the staff.

RESEARCH COURSES

The courses described below may be continued for several quarters and for more than one academic year. Credit of 5 quarter hours or more may be earned each quarter in any course.

P.H. 301. ADVANCED EPIDEMIOLOGY (5 or more).

A research course for those qualified to do independent investigation under supervision. Admission to this course is granted only after consultation with the professor who must assign or approve the subject of research. A student may spend part or all of his time in research. *Ten or more laboratory hours a week.* Professor Rosenau.

P.H. 306. RESEARCH IN SYPHILOLOGY (5 or more).

Special arrangements may be made by properly qualified students to work on problems in the field of experimental syphilis. Admission to this course is granted only after consultation with the professor. *Ten or more laboratory hours a week.* Professor Fleming.

P.H. 311. RESEARCH IN PUBLIC HEALTH ADMINISTRATION (5 or more).

Individual arrangements may be made by the advanced student to spend part or all of his time in supervised investigation of selected problems in Public Health Administration. *Ten or more laboratory hours a week.* Professor Norton.

P.H. 313. RESEARCH IN CHILD HYGIENE (5 or more).

The advanced student may undertake supervised investigation of special problems in school and preschool health or other phases of child hygiene activities. *Ten or more laboratory hours a week.* Professor Norton.

P.H. 331. RESEARCH IN PREVENTIVE MEDICINE AND PARASITOLOGY (5 or more).

Research problems may be undertaken by advanced students. *Ten or more laboratory hours a week.* Professor Brown.

P.H. 361. RESEARCH IN SANITARY SCIENCE (5 or more). Prerequisite or corequisite, P.H. 131, P.H., 161, P.H. 162, P.H. 163, P.H. 164, P.H. 201.

Research problems in sanitary chemistry and biology, such as soil pollution, bathing places, industrial and domestic wastes, malaria control, milk and food sanitation, institutional and transportation sanitation. *Ten or more laboratory hours a week.* Professors Baity, Gotaas.

P.H. 371. RESEARCH IN SANITARY ENGINEERING (5 or more). Prerequisite or corequisite, P.H. 162, P.H. 163, P.H. 164, P.H. 272, P.H. 273, P.H. 274.

Research in the engineering phases of problems relating to water supply, purification, sewerage and sewage treatment, and stream pollution. *Ten or more laboratory hours a week.* Professors Baity, Gotaas.

P.H. 381. RESEARCH IN INDUSTRIAL SANITATION (5 or more). Prerequisite or corequisite, P.H. 281.

Research in problems of industrial sanitation, such as the control of fumes, gas, dust, bacteria, and illumination. *Ten or more laboratory hours a week.* Professor Gotaas.

DEPARTMENT OF ROMANCE LANGUAGES

William Morton Dey, Sturgis Elleno Leavitt, Urban Tigner Holmes, Jr., Nicholson Barney Adams, Howard Russell Huse, John Coriden Lyons, Professors.
Ralph Steele Boggs, Sterling Aubrey Stoudemire, William Leon Wiley, Associate Professors.
Robert White Linker, Assistant Professor.

Departmental Regulations

All candidates for higher degrees are required to have a knowledge of Latin. This may be construed to mean an elementary knowledge in certain cases. Candidates for the degree of Master of Arts are strongly advised to have a reading knowledge of German, as well as of French. Those who intend to pursue the degree of Doctor of Philosophy are required to have this reading knowledge by the general regulations of the Graduate School.

Candidates for the degree of Master of Arts whose major is Spanish must choose French as their minor subject. Those who choose French as a major usually pursue their minor work in Spanish or Italian; they may, after consultation with the chairman, substitute Latin, Comparative Literature, German, or English.

Candidates for the degree of Doctor of Philosophy must choose French as a major and Spanish and Italian as minors; or Spanish as a major and French and Italian as minors.

Before the degree of Doctor of Philosophy will be awarded, the candidate must have spent six months in the country of his major interest, three months of which must have been spent in work upon his thesis. This requirement is usually satisfied in two summers abroad.

Research Facilities

The library is a subscriber to more than fifty periodicals in which space is given either wholly or in part to the Romance languages and literatures. The complete files of nearly all these journals are in its possession. Materials for research are especially rich in Romance linguistics, medieval French literature, French literature of the sixteenth, seventeenth, and nineteenth centuries, in Spanish literature of the seventeenth and nineteenth centuries and of the contemporary period. In modern Spanish drama a collection of over 12,000 plays offers a wealth of material for research. The reference collection of

the general library is unusually good for Romance bibliography. A photostating machine is at the disposal of faculty and of advanced students. The library also has the equipment for using film reproductions of manuscripts and rare books which furnish materials for investigation at very low lost. The Hanes and Hunter collections of incunabula and other rare books are made readily accessible for students in the department.

Some recent doctoral dissertations which have been accepted are: "French Tragedy and Tragic Theory, 1690-1715," "Studies in Middle French Syntax after the Keniston Checklist Method," "The *Consaus d'amours* and the *Poissanche d'amours* of Richard de Fournival," "The Madrid Stage, 1820-1833," "Jesūs Castellanos, his Life and his Works."

FRENCH

Courses for Graduates and Advanced Undergraduates

109. THE FRENCH NOVEL (5). Prerequisite, French 72.

A study of the development of the novel in France. Lectures, readings, reports. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Dey.

115. FRENCH LYRIC POETRY (5). Prerequisite, French 72.

A study of French lyric poetry, beginning with Villon. Lectures, readings, reports. *Five hours a week, spring quarter.* Professor Huse.

126. HISTORY OF THE FRENCH LANGUAGE (5). Prerequisite, French 72.

A general survey from the origins to the present day, with especial emphasis upon the period, 1500-1900; the influence of the Erudits, Précieuses, Philosophes, and Romanticists; spelling reforms. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Holmes.

131. THE FRENCH DRAMA PRIOR TO 1700 (5). Prerequisite, French 72.

A survey of the religious and comic theatres of the Middle Ages; the theatre of the Renaissance and its relation to the classic theatres of Greece and Rome; the neo-classic theatre of the 17th century. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Wiley.

132. THE FRENCH DRAMA SINCE 1700 (5). Prerequisite, French 72.

A survey of Modern French Drama with special attention to the theatrical principles and ideas of the different dramatic schools of the last two centuries. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Wiley.

145. FRENCH PHONETICS (5). Prerequisite, French 72.

A detailed study of the French vowel and consonant sounds by the phonetic method. This course is required of candidates with a

major in French for the master's degree, and it should be elected by anyone who intends to teach French. *Five hours a week, fall quarter.* Professors Dey, Wiley.

161. THE SIXTEENTH CENTURY (5). Prerequisite, French 72.

A general treatment of the chief movements in French literature of the 16th century, with some reference to the Italian Renaissance and its influence on France. Specimen readings from the more important poets and prose writers: Marot, Rabelais, the Pléiade, Montaigne, etc. *Five hours a week, spring quarter.* Professor Lyons.

171. FRENCH LITERATURE OF THE SEVENTEENTH CENTURY I (5). Prerequisite, French 72.

A study of the period of Henry IV and Louis XIII. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Lyons.

172. FRENCH LITERATURE OF THE SEVENTEENTH CENTURY II (5). Prerequisite, French 72.

This course deals with the literature of the reign of Louis XIV. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Lyons.

181. FRENCH LITERATURE OF THE EIGHTEENTH CENTURY (5). Prerequisite, French 72.

Voltaire, Montesquieu, Rousseau, les Encyclopédists. A study of the literary movement of the century and of the origins of romanticism. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Huse.

191. FRENCH ROMANTICISM (5). Prerequisite, French 72.

French literature from 1800 to 1850, with special stress on the works of the romantic poets, Lamartine, Hugo, Vigny, and Musset. Lectures, readings, reports. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Dey.

192. FRENCH LITERATURE SINCE 1850 (5). Prerequisite, French 72.

A study of the later literary movements of the 19th century, with some emphasis on the contemporary period. Lectures, readings, reports. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Dey.

CELTIC 105. OLD IRISH (5).

Grammar and reading of texts. *Pokorny's Old Irish Reader, Táin Bó Cūailnge* (Supplement to *Eriu*). *Five hours a week, winter quarter.* Professor Holmes.

Courses for Graduates

221-222-223. OLD FRENCH (15).

Reading of the oldest texts: La Chanson de Roland; Aucassin et Nicolette; Chrétien de Troyes. Lectures on French phonology and morphology. *Five hours a week, fall, winter, and spring quarters.* Professor Holmes.

225. PROVENCAL (5).

A study of the ancient language and literature of Provence. The poetry of the Troubadours. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Holmes.

231. FRENCH SYNTAX (5).

The most important phases of modern French syntax studied from a historical point of view. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Dey.

248. FRENCH LITERATURE OF THE 14th and 15th CENTURIES (5). Prerequisite, French 221 or 265.

A combination of literary survey and reading course. Especial attention will be paid to Villon, who will be read in entirety with commentary. General treatment of such writers as Machaut, Froissart, Christine de Pisan, etc. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Holmes.

265-266. FRENCH LITERATURE OF THE RENAISSANCE (10).

A study of French Literature of the 16th century. Italian and French Humanism. The Reformation, Marot, Rabelais, Calvin, the Pléiade, Montaigne. (1940-1941 and alternate years.) *Five hours a week, winter and spring quarters.* Professor Lyons.

324abc. ROMANCE PALEOGRAPHY (5).

A study of the more important scripts, methods of dating manuscripts, diplomatic editing, and principal methods of making a critical edition, with practical exercises. *Two hours a week, fall, winter, and spring quarters.* Professor Linker.

331. HISTORY OF FRENCH LITERATURE PRIOR TO 1300 (5).

Lectures and seminar papers. A complete and careful study of the origins of French literature, with emphasis upon the twelfth century Renaissance, the period of the epics, beginning of romances, etc. French 221 is desired, though not prerequisite. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Holmes.

391. STUDIES IN ROMANTICISM (5). Prerequisite, French 191.

Seminar course. Intensive study of one of the romantic poets. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Dey.

395. RESEARCH (5).

Research in a special field under the direction of a member of the department.

SPANISH

Courses for Graduates and Advanced Undergraduates

109. EARLY SPANISH PROSE FICTION (5). Prerequisite, Spanish 72.

A study of the origins and developments of the novel in Spain up to the time of Cervantes. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor N. B. Adams.

110. THE SPANISH NOVEL—1605-1898 (5). Prerequisite, Spanish 72.

A survey of the novel from Cervantes through the nineteenth century. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor N. B. Adams.

111. MODERN SPANISH NOVELISTS (5). Prerequisite, Spanish 72.

A study of the "Generation of '98," with consideration of present day tendencies. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor N. B. Adams.

112. THE NOVEL IN SPANISH AMERICA (5).

A survey of the novel in Spanish America with special attention to notable examples. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Leavitt.

115. EARLY LYRIC POETRY (5). Prerequisite, Spanish 72.

A survey of lyric poetry in the Spanish peninsula from the origins through the Siglo de Oro. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor N. B. Adams.

116. MODERN LYRIC POETRY (5). Prerequisite, Spanish 72.

Brief treatment of the poetical schools of Seville and Salamanca in the eighteenth century and study of Spanish lyric poetry through the nineteenth century to the present day. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor N. B. Adams.

117. CERVANTES (5). (Comparative Literature 117).

Consideration of the romances of chivalry in Spain; study of Cervantes' *Don Quixote* and the *Exemplary Novels.* Credit in Spanish is given for this course upon approval of the instructor. *Five hours a week, spring quarter.* Professor Stoudemire.

131. LOPE DE VEGA AND HIS CONTEMPORARIES (5). Prerequisite, Spanish 72.

Reading of representative plays of Lope de Vega, Tirso de Molina, Guillén de Castro, Ruiz de Alarcón, etc. Lectures and reports. (1941-1942 and alternate years.) *Five hours a week, fall quarter.* Professor Leavitt.

132. CALDERON AND HIS CONTEMPORARIES (5). Prerequisite, Spanish 72.

Reading of representative plays of Calderón de la Barca, Moreto, Rojas, etc. Lectures and reports. (1941-1942 and alternate years.) *Five hours a week, winter quarter.* Professor Leavitt.

134. SPANISH DRAMA OF THE NINETEENTH CENTURY (5). Prerequisite, Spanish 72.

Reading of representative plays of this period. Lectures, oral and written reports. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Leavitt.

135. MODERN SPANISH DRAMA (5). Prerequisite, Spanish 72.

Reading of plays of Dicenta, Benavente, Linares Rivas, the Alvarez Quintero brothers, Marquina, Martínez Sierra, etc. Lectures, oral and written reports. (1940-1941 and alternate years.) *Five hours a week, winter quarter.* Professor Leavitt.

145. SPANISH PHONETICS (5). Prerequisite, Spanish 72.

A detailed study of the Spanish vowel and consonant sounds by the phonetic method. This course is required of candidates with a major in Spanish for the master's degree, and it should be elected by anyone who intends to teach Spanish. *Five hours a week, spring quarter.* Professor Boggs.

Courses for Graduates

221-222. OLD SPANISH (10).

Ford's *Old Spanish Readings.* The Poem of the Cid and other old Spanish texts. Lectures on phonology, morphology, and syntax. *Five hours a week, fall and winter quarters.* Professor Boggs.

241. SEMINAR: STUDIES IN SPANISH AMERICAN LITERATURE (5).

Problems of bibliography, source materials, special studies, research. (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Leavitt.

291. EARLY SPANISH LITERATURE (5). Prerequisite, Spanish 221-222.

Survey of Medieval Spanish Literature. *Five hours a week, spring quarter.* Professor Boggs.

393. SPANISH ROMANTICISM: Seminar course (5).

General survey of the Romantic period in Spain and investigation of special problems. (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor N. B. Adams.

395. RESEARCH (5)

Research in a special field under the direction of a member of the department.

Attention is called to General and Comparative Literature 117.

ITALIAN

Courses for Graduates and Advanced Undergraduates

131. DANTE I (5). Prerequisite, Italian 51 and 52.

The *Vita Nuova* and the *Inferno,* with some reference to the origins of Italian literature and to the poets of the *dolce stil nuovo.* (1941-1942 and alternate years.) *Five hours a week, spring quarter.* Professor Huse.

132. DANTE II (5). Prerequisite, Italian 131.

The *Purgatorio* and the *Paradiso.* (1940-1941 and alternate years.) *Five hours a week, spring quarter.* Professor Huse.

156. DANTE IN ENGLISH TRANSLATION (5). (Comparative Literature 156.)

The *Vita Nuova* and the *Divine Comedy;* the precursors of Dante and the poets of the *dolce stil nuovo.* Special studies of Dante's political and social philosophy, with particular emphasis on Dante as a poet and as a guide. *Five hours a week, fall quarter.* Professor Huse.

161. ITALIAN LITERATURE OF THE RENAISSANCE (5). Prerequisite, Italian 51 and 52.

Readings from the principal authors, with special emphasis on Ariosto, Machiavelli, Castiglione, and the lyric poets. Collateral reading on the history of Italian culture during the Renaissance. *Five hours a week, winter quarter.* Professor Huse.

Course for Graduates

221. OLD ITALIAN (5).

Reading of the poets previous to Dante. Early monuments. Survey of phonology and morphology. (1940-1941 and alternate years.) *Five hours a week, fall quarter.* Professor Holmes.

DEPARTMENT OF SOCIAL WORK

Roy Melton Brown, Harry Wolven Crane, Ernest Rutherford Groves, Harold Diedrich Meyer, Howard Washington Odum, Wiley Britton Sanders, Professors.

Elizabeth Kirkland Carter, James William Fesler, Margaret Jarman Hagood, Katharine Jocher, George Harold Lawrence, Paul Woodford Wager, Associate Professors.

Ruth Evelyn Dodd, Instructor.

Elbert Lapsley Persons, William Perry Richardson, James Watson, Lecturers.

Cecil Rogers Clifford, Emeth Tuttle Cochran, Field Work Supervisors.

The Department of Social Work is a unit of the Division of Public Welfare and Social Work. The Division through the Department and other departments of social science offers an accredited curriculum in social work. Its main purpose is to train for general social work with emphasis on public welfare.

The Division is particularly interested in public welfare and other social work problems in North Carolina and the South. It emphasizes rural social work. Through coordination of its field work program with the work of the office of the Superintendent of Public Welfare of Orange County and with the cooperation of the State Board of Charities and Public Welfare it is able to offer under competent supervision field work practice in communities presenting typical North Carolina problems.

The work offered in the Division of Public Welfare and Social Work leads to the degrees of Master of Science in Social Work and of Doctor of Philosophy. Before a student may be admitted to candidacy for a degree he must have completed the work for the bachelor's degree in a college or university of recognized standing with a major in economics, political science, psychology, or sociology. In all cases he should have had the basic introductory courses in economics, psychology, and sociology. The student deficient in these requirements may be admitted to courses in the discretion of the Division, but must remove the deficiencies before he may be admitted to candidacy for a degree. For the Master's degree six quarters are required. At least nine courses must be chosen from those approved for credit toward the regular degree of Master of Arts. The selection of these courses must conform to the general rules of the Graduate School as to major and minor

groupings. The same principle shall be applied, in so far as practicable, to the selection of other courses.

The degree of Doctor of Philosophy will be conferred only upon those who have completed, with high distinction, a period of extended study and investigation in some phase of the field of social work. A minimum period of two years beyond the time required for the degree of Master of Science in Social Work will be required for the doctor's degree. Otherwise, in general, the regulations governing the degree in other departments of the University apply also in the Department of Social Work.

On the recommendation of the faculty of the Department, the requirement of a reading knowledge of a foreign language may be waived in the case of a candidate for the degree of Master of Science in Social Work.

Through the Department of Social Work, the Department of Sociology (with its interest in state and regional planning and supporting courses in Rural Social-Economics), and the Institute for Research in Social Science (with its participating departments in the social sciences), the University offers unusual opportunities for research in public welfare and social work, especially in problems relating to rural social work.

More detailed information may be found in the special catalogue of the Division of Public Welfare and Social Work.

Courses Offered

134. COUNTY GOVERNMENT AND ADMINISTRATION (Political Science) (5).

A study of the forms of organization, the functions, and the operation of County Government in the United States and especially in North Carolina in their historical development, but with special emphasis on present conditions and tendencies and on possible improvements. Each student will be required to study, as extensively and as intensively as possible, the government and administration of one county, preferably his home county, and to put his results into essay form. Textbooks, lectures, readings. *Five hours a week, winter quarter.* Professor Wager.

160. INTRODUCTION TO SOCIAL WORK (5).

Essentially a pre-professional course for social work students, giving a bird's-eye view of the whole field of social work, with a brief discussion of its history, nature, purpose, scope, and present trends. Primary emphasis is placed upon methods of treatment of the socially maladjusted, such as the aged poor, the physically handicapped, those suffering from mental disease or deficiency, the delinquent, and the criminal. Special clinics and institutional visits are arranged to supplement classroom work. *Five hours a week, fall or spring quarter.* Professor Sanders.

161. THE FAMILY (Sociology 161) (5).

The history, purpose, and problems of the family with especial attention to social conditions influencing family life and to efforts for family conservation. Open to men and women. *Five hours a week, winter quarter.* Professor Groves.

173. PLAY AND RECREATION (Sociology 173) (5).

The theories of play, play activities, attitudes, history of the play movement, play leadership, programs, values, sex and age differences, classification of movements, application to community life *Five hours a week, spring quarter.* Professor Meyer.

174. PRINCIPLES OF SOCIAL GROUP WORK (3).

An introduction to the principles, philosophy, methods, and agencies of group work. Group work as an approach and method in social work. The application of group work skills to various types of groups with special emphasis on program development. The course will be focused, to a large extent, on the Southern region and rural life. *Three hours a week, winter or spring quarter.* Professor Meyer.

185. FINANCIAL ADMINISTRATION (Political Science 185) (5). Prerequisite, Political Science 31-32-33 or 41-42 or 52 and 101.

A treatment of the fiscal aspects of public administration, including not only the assessment and collection of taxes, but also control of expenditures. Attention will be given to public purchasing, custody of funds, debt administration, budgets and audits. *Five hours a week, winter quarter.* Professor Wager.

191. SOCIAL STATISTICS (Sociology 191) (6). Prerequisite, Sociology 51, 52.

The topics usually covered in an elementary statistics course are treated with emphasis on those best adapted to sociological research. With laboratory materials of a sociological nature, the student in learning the processes of statistical analysis may become familiar with sources, interpretation, and presentation of social data. *Four lecture and four laboratory hours a week, fall quarter.* Professor Hagood.

198. DIAGNOSIS OF JUVENILE DELINQUENCY (5).

After a brief historical background this course traces the development of case study and diagnosis of juvenile delinquency through various approaches including the environmental, biological, psychological, psychiatric, sociological, anthropological, psychoanalytic, and bio-chemical. Considerable attention is devoted to current methodology in this field in an attempt to evaluate major causative factors in delinquency. *Five hours a week, fall or spring quarter.* Professor Sanders.

201. COMMUNITY ORGANIZATION (5).

A consideration of community organization, especially as it relates to present day public welfare practice, including a review of sociological factors in community development. Also the study of present practices with emphasis upon applicability to rural and small town areas. *Five hours a week, fall or spring quarter.* Professor Lawrence.

209. BACKGROUND AND PHILOSOPHY OF SOCIAL CASE WORK (5). Corequisite, Social Work 280.

A discussion of social case work, generic and specific; its meaning and development, scope, changing concepts; application to the different fields of social work. *Five hours a week, every quarter.* Professor Carter.

210. FAMILY CASE WORK I (2½). Prerequisite, Social Work 160, Social Work 209, or at the discretion of the head of the Divisionn; corequisite, Social Work 281. It is preferable that this course betaken with a course or courses in Case Work Practice.

The process of case work; scope and limitations in the relationship among agency, caseworker, and the individuals and families they serve; discussion of case material provided by the instructor and from the student's own experience. *Two and a half hours a week, every quarter.* Professor Carter.

211. FAMILY CASE WORK II (5). Prerequisite, Social Work 210.

A continuation of course 210. *Five hours a week, every quarter.* Professor Carter.

212. ADVANCED SOCIAL CASE WORK (2½ or 5). Prerequisite, Social Work 209, 210, 211, or the equivalent in the discretion of the instructor; corequisite, a course in case work practice.

A discussion course with intensive study and analysis of case work problems arising in the professional experience of members of the class. This is a course for students in their second year of social work study and for social case workers in agencies who wish to continue their study of case work. *Five or two and a half hours a week, winter quarter.* Professor Carter.

214. RESOURCES FOR TREATMENT (5). Prerequisite, Social Work 160, 209.

Discussion of resources for treatment in case work with especial emphasis upon public welfare activities in rural and small town areas; including the study of special facilities for the treatment of various types of cases, the particular social legislation involved, plus the actual working procedure necessary for effective work in the field. *Five hours a week, winter quarter.* Professor Lawrence.

215. CASE WORK PRACTICE I (5). Prerequisite, Social Work 160, prerequisite or corequisite, Social Work 210.

A seminar in case work. Field work with cases, conferences, office work. A minimum of fifteen hours work a week. *Credit five hours a week, every quarter. Special fee, $10.00.* Professor Lawrence, Miss Dodd.

216. CASE WORK PRACTICE II (5). Prerequisite, Social Work 215.

A continuation of course 215. A minimum of fifteen hours work a week. *Credit five hours a week, every quarter. Special fee, $10.00.* Professor Lawrence, Miss Dodd.

217. CASE WORK PRACTICE III (5). Prerequisite, Social Work 215.

The aim in this course is to give the student supervised work under conditions that approximate those in a well-ordered but not

elaborate public social agency. A minimum of fifteen hours work a week. *Credit five hours a week, every quarter. Special fee, $10.00.* Professor Lawrence, Miss Dodd.

218. CASE WORK PRACTICE IV (5). Prerequisite, Social Work 215.

This course attempts to give the student additional supervised experience in one or more phases of social work as best meets his needs. Fifteen hours work a week. *Credit five hours a week, every quarter. Special fee, $10.00.* Professor Lawrence, Miss Dodd.

219. CASE WORK PRACTICE V (2½).

This course is intended to supplement 215, 216, 217, or 218, enabling the student when desirable to do an additional amount of field work in a particular quarter. Seven and one-half hours a week, or a total of 150 hours. *Two and one-half hours a week, every quarter. Special fee, $5.00.* Professor Lawrence.

225. PUBLIC PERSONNEL ADMINISTRATION (Political Science 225) (5). Prerequisite, approval of the instructor.

Designed primarily for students planning to enter the public service, the course will intensively investigate the problems of public personnel administration. Particular emphasis will be placed on policies and techniques of recruitment, classification, compensation, promotion, transfer, separation, provision of satisfactory working conditions, and organization of the personnel agency. *Five hours a week, spring quarter.* Professor Fesler.

230. PROBATION (2½).

A study of probation as a method of treatment for adult delinquents. *Two and one-half hours a week, fall or winter quarter.* Professor Brown.

231. PAROLE (2½).

Parole in the treatment of adult offenders against the law. *Two and one-half hours a week, winter or spring quarter.* Professor Brown.

244. MENTAL HYGIENE (5).

A course primarily for students who are working toward a degree in social work. Particular emphasis will be given to the place of the social worker in mental hygiene; feeble-mindedness, psychoses, and minor mental aberrations in relation to social work; and ways in which a social worker may be a factor in mental hygiene. *Five hours a week, fall quarter.* Professor Crane.

252. METHODS IN SOCIAL RESEARCH (Sociology 208) (5).

Outlines of social research including the spirit of scientific research, social research, and the new alignment of the social sciences. *Five hours a week, fall quarter.* Professors Odum, Jocher.

253. SOCIAL STATISTICS (Sociology 253) (5).

This is a seminar course on the application of statistical method to social phenomena. *Five hours a week, winter quarter.* Professor Hagood.

262. PUBLIC WELFARE ADMINISTRATION (5).

1. The organization of Public Welfare in the United States. 2. Detailed study of the North Carolina Plan. 3. Office Organization and Administration. *Five hours a week, fall or spring quarter.* Professor Brown.

263. PUBLIC ASSISTANCE (5).

A study of public relief to the poor and other handicapped groups, including those affected by the National Social Security Act. *Five hours a week, winter quarter.* Professor Brown.

265. HISTORICAL BACKGROUND OF SOCIAL WORK (5).

This course will trace from their English origins the development of laws for the relief of the poor and the repression of vagrancy; the origin of the prison system and reforms in the criminal law; the training of pauper and other poor children; provision for foundlings and "penitent prostitutes"; medical care for the indigent sick. *Five hours a week, winter or spring quarter.* Professor Sanders.

268. SOCIAL LAWS (5).

The development of social laws pertaining to important social problems. Special attention to social laws of North Carolina. *Five hours a week, spring quarter.* Professor Brown.

269. SOCIAL WORK ADMINISTRATION (5).

An analysis of the administration of social agencies, both public and private. Emphasis is placed upon recent trends and developments in this field with special emphasis upon the growing importance of office organization and management, including personnel, improved techniques and procedures, and the preparation and keeping of records. The administration of agencies in rural areas and in small towns is given special attention. *Five hours a week, spring quarter.* Professor Jocher.

270. MARRIAGE (5).

A demonstration course in teaching marriage to college men and women, with occasional conferences for discussion of the problems which arise in the presentation of material to the class. *Five hours a week, spring quarter.* Professor Groves.

271. THE FAMILY (5).

A demonstration course in the teaching of the family, including conferences from time to time with the students electing this work in the field of marriage and the family. *Five hours a week, winter quarter.* Professor Groves.

280. MEDICAL INFORMATION I (2½). Corequisite, Social Work 209.

A clinical approach to venereal diseases, tuberculosis, and other important general and degenerative diseases, together with the hygiene of pregnancy and infancy, with special emphasis on the relation of these conditions to social problems. *Two and one-half hours a week, winter quarter.* Dr. Persons, and special lecturers.

281. MEDICAL INFORMATION II (2½). Corequisite, Social Work 210.

A survey of public health organization and practices, and of the medical institutions and facilities with which the social worker comes in contact. *Two and one-half hours a week, spring quarter.* Dr. Richardson.

282. PSYCHIATRY FOR THE SOCIAL WORKER (2½).

This course includes a survey of psychiatric problems and procedures with emphasis upon those which are of the most importance to the social worker. *Two and one-half hours a week, winter or summer quarter.* Dr. Watson.

298. TREATMENT OF JUVENILE DELINQUENCY (5). Prerequisite, Social Work 198.

The origin of the juvenile court, its organization and legal relationship to other courts; methods of procedure; disposition of cases including probation, foster home placement, institutional care, and parole; results of treatment; preventive programs. Method of selection of juvenile courts, detention homes, and training schools. *Five hours a week, winter quarter.* Professor Sanders.

299. PUBLIC CARE OF CHILDREN (5).

Methods and techniques of treatment by public social agencies of dependent and neglected children, defective children, those in employment, etc. Public responsibility for the welfare of children in general from the standpoint of education, health, maintenance. State systems of child welfare. *Five hours a week, winter or spring quarter.* Professor Sanders.

305. SEMINAR IN COUNTY ADMINISTRATION (5). Prerequisite, Political Science 134, or two other courses in Political Science.

Research, reading, and conferences on special phases of county organization and administration. *Five hours a week, fall or winter or spring quarter.* Professor Wager.

320. SEMINAR ON SUPERVISION IN SOCIAL WORK (2½ or 5). Prerequisite, Social Work 209, 210, 262, 299, and two courses in Case Work Practice or one year's experience in a supervisory capacity in social work.

The field of supervision; scope and limitation of the supervisory process; distinguishing characteristics in different areas of social work; basic philosophy and approach to the supervisory situation. *Two and one-half or five hours a week, fall or spring quarter.* Professor Carter.

327, 328, 329. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics in the field of Social Planning and Public Welfare. *Five hours a week, fall, winter, and spring quarters.* Professor Odum.

331. THE FAMILY AND MARRIAGE (5). Seminar.

A survey of the organization and techniques which have developed to meet present needs of the family and marriage. *Five hours a week, fall quarter.* Professor Groves.

332, 333. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics in the field of the family. *Five hours a week, winter and spring quarters.* Professor Groves.

341. SEMINAR (5).

Individual research in a special field under the direction of a member of the department.

362, 363, 364. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics in the fields of public welfare administration and of the causes, prevention, and treatment of poverty. *Five hours a week, fall, winter, and spring quarters.* Professor Brown.

392, 393, 394. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics in the field of child welfare. *Five hours a week, fall, winter, and spring quarters.* Professor Sanders.

Courses 209, 210, 211, 214, 215, 216, 217, 218, 280, 281, 321, may be counted for credit toward the Master's degree only by candidates for the degree of Master of Science in Social Work.

Course 269 is primarily a social work course but may be elected by students with majors in sociology upon the special recommendation of the head of the Department of Sociology.

DEPARTMENT OF SOCIOLOGY

Howard Washington Odum, Harold Diedrich Meyer, Samuel Huntington Hobbs, Jr., Ernest Rutherford Groves, Rupert Bayless Vance, Wiley Britton Sanders, Professors.

Lee Marshall Brooks, *Guy Benton Johnson, Katharine Jocher, Harriett L. Herring, Margaret Jarman Hagood, Associate Professors.

The general emphasis of the Department is upon sociology as an increasingly more scientific and realistic study of human society with special emphasis upon research, the development of adequate methods, and upon sociology as a tool for the use of the student in pre-professional work, and in attaining maturity and liberality in the educational process. A special feature has been made of the regional laboratory and of the study of folk-cultures and technical civilization. Realistic results are sought through the application of objective and scientific methods to the study of unit problems of contemporary society, especially rural and agrarian culture, as well as in the testing fields of education, social planning, social work, and public welfare. The Department frankly seeks to discover and develop adequate personnel, well equipped for both teaching and research.

The Department is housed in the newly reconstructed Alumni Hall and in the Rural Social-Economics quarters in the Library, and works closely with the Institute for Research in Social Science and the Division of Social Work and Public Welfare, which share the new building with sociology.

The seminar library of the unit in Rural Social-Economics is perhaps the best library of its sort in the United States, particularly in county government, rail-and-water transportation, the country church, farm tenancy, land economics, and state aid to land ownership. It is well equipped with the rare literature of its special field of learning, with standard texts and reference volumes, current reports, bulletins, pamphlets, journals, magazines, newspaper clippings, etc. It is also a clearing house of information about North Carolina—economic, social, and civil. The files of mounted clippings in rural-social-economic-civic subjects are indexed in accord with the index system of the general library.

* Absent on leave, 1939-1940.

Courses for Graduates and Advanced Undergraduates

151. SOCIAL ANTHROPOLOGY (5).

A general course in social anthropology, but with some attention to physical anthropology and archaeology. The nature of culture; culture processes; the modern cultural environment; and social change. *Five hours a week, spring quarter.* Professor Johnson.

152. SOCIAL THEORY (5).

A survey of the range of contemporary social theory with preliminary consideration of its historical backgrounds. Leading theories are summarized, compared, and criticized. Required of all candidates for graduate degrees. *Five hours a week, fall or spring quarter.* Professor Vance.

154. CONTEMPORARY SOCIETY (5).

The study of the cultural evolution of society from the viewpoint of the folk regional development—Folkways—Stateways—Geographic factors—Regions—States—The application to contemporary American society—Application to democracy—Social achievements—The teachings of sociology in relation to modern technology and change. *Five hours a week, fall quarter.* Professor Odum.

155. SOCIAL PROGRESS AND SOCIAL VALUES (5). Prerequisite, two or more courses in Sociology.

This course reviews the theories and philosophy of social progress, studies social trends and social change; attempts to set up objective measuring scales of change; attempts to appraise objectively aspects of material progress and of social progress and social regress. After brief consideration of social values it attempts to set up certain objectives and goals of social achievement as a framework upon which to measure and project human progress. *Five hours a week, winter quarter.* Professor Odum.

160. INTRODUCTION TO SOCIAL WORK (5).

A course in social problems adapted to meet the needs of students entering upon professional training for social work. *Five hours a week, fall or spring quarter.* Professor Sanders.

161. THE FAMILY (5).

The history, purpose, and problems of the family with special attention to social conditions influencing family life and to efforts for family conservation. Open to men and women. *Five hours a week, winter quarter.* Professor Groves, Dr. Klaiss.

168. THE COMMUNITY (5).

1. The study of urban structure and growth, with primary emphasis upon such problems and programs as housing, delinquency areas, recreation, and decentralization. 2. Community organization, its origins, development, problems, and prospects. Large use will be made of recent literature in this field. *Five hours a week, spring quarter.* Professor Brooks.

169. THE INDUSTRIAL COMMUNITY (5). Prerequisite, two courses in Sociology.

A study of the industrial community with special reference to types in the South: the coming of industry and the industrial com-

munity; analysis of the various types and comparison with non-industrial communities within and outside the South; special problems such as paternalism, community organization, social work and economic and labor problems, as they affect the community. *Five hours a week, winter quarter.* Professor Herring.

171. EDUCATIONAL SOCIOLOGY (5).

Education as a process of social control and achievement. The social resources of the school and other educational resources. Social problems of the teacher. *Five hours a week, fall or spring quarter.* Professor Meyer.

173. PLAY AND RECREATION (5).

The theories of play, play activities, attitudes, history of the play movement, play leadership, programs, values, sex and age differences, classification of movements, application to community life. *Five hours a week, spring quarter.* Professor Meyer.

175. EXTRA-CURRICULAR ACTIVITIES (3).

Clubs, student participation in school government, physical education, publicity in school publications, commencement, many miscellaneous topics; theoretical and practical studies of institutions promoting successful programs, bibliographical materials. *Three hours a week, winter quarter.* Professor Meyer.

181. REGIONAL SOCIOLOGY OF THE SOUTH (5).

A study of the South as a region showing geographic, population, and sociological factors and trends; special emphasis upon methods and techniques of investigation of social and regional situations; genetic, case, and statistical approach and method. *Five hours a week, fall quarter.* Professor Brooks.

185. THE NEGRO (5).

A study of the American Negro, with particular reference to the South, the historical and cultural background of the Negro in Africa and in America; development since emancipation; bi-racial system; and problems of race relations. *Five hours a week, fall quarter.* Professor Johnson.

186. POPULATION (5).

A study of problems of quality and quantity of population including theories of population increase, and problems of race, immigration, and eugenics. *Five hours a week, winter quarter.* Professor Vance.

191. SOCIAL STATISTICS (6). Prerequisite, Sociology 51, 52.

The topics usually covered in an elementary statistics course are treated with emphasis on those best adapted to sociological research. With laboratory materials of a sociological nature, the student in learning the processes of statistical analysis may become familiar with sources, interpretation, and presentation of social data. *Four lecture and four laboratory hours a week, fall quarter.* Professor Hagood.

192. CRIME (5).

Criminology and penology; the study of historical and contemporary theory and practice. *Five hours a week, winter quarter.* Professor Brooks.

193. SOCIAL PATHOLOGY (5).

Emphasis on poverty and relief with coordinate study of delinquency, vagrancy, prostitution, alcoholism, crime, mental defect, etc. Analysis and therapeutic measures. Occasional field trips to county and state institutions. *Five hours a week, fall quarter.* Professor Meyer.

198. JUVENILE DELINQUENCY (5).

An evaluation of the major causative factors in delinquency from the viewpoint of the social sciences. *Five hours a week, fall or spring quarter.* Professor Sanders.

Courses for Graduates

208. METHODS IN SOCIAL RESEARCH (5).

An introduction to social research planned to give the student an adequate preliminary acquaintance with the general field of social research together with special approaches and methods. The approaches include the philosophical, analogical, biological, psychological, sociological, anthropological, economic, politico-juristic. The methods include the historical, the statistical, the survey, the case, and the scientific-human. In addition to this, special emphasis is put upon the training of personnel and the methods of procedure in working with source materials. *Five hours a week, fall quarter.* Professors Odum, Jocher.

209. REGIONAL PROBLEMS AND PLANNING (5).

A survey of the field of regional social problems and planning with special reference to the southern regions of the United States. Brief survey of the rise and development of regionalism and of planning, together with recent developments of both in the United States based on a six-fold division of the nation as presented in *Southern Regions of the United States. Five hours a week, winter quarter.* Professor Odum.

210. FOLK SOCIOLOGY (5).

This is an approach to a new general sociology, utilizing the folk regional society and regionalism as a study of natural societal evolution in contrast with modern artificial society and technology. The chief objective is to seek contributions to sound social theory as it relates to the understanding of cultures and the direction of civilization. *Five hours a week, spring quarter.* Professor Odum.

212. CONTEMPORARY AMERICAN SOCIOLOGY (5).

This course will present a general survey of the work and personalities of living American sociologists projected on the background of the sociology of Franklin Henry Giddings. *Five hours a week, winter quarter.* Professor Odum.

215. SOCIAL DEMOGRAPHY (5).

This course attempts to synthesize the emerging concepts of population, culture, and the region by depicting the resulting cultural landscape. The contributions of cultural anthropology, social geography, regional sociology, and human ecology are studied in an effort both to evaluate the socially significant factors of the environment and to arrive at a classification of regions, culture areas, and social types. *Five hours a week, spring quarter.* Professor Vance.

218. HUMAN ECOLOGY (5).

This seminar course is devoted to the consideration of theory and research emerging around the concept of human ecology. A review of the background of human ecology is followed by readings, reports, and research on its contemporary development. *Five hours a week, spring quarter.* Professor Vance.

230. RACE AND CULTURE CONTACTS (5). Prerequisite, undergraduate major in sociology.

This course will attempt to describe and analyze the problems arising from the contacts of peoples of different racial or cultural heritages, with particular reference to relations between Negroes and white people in the New World. Comparative studies of the nature and consequences of these relations in various parts of the New World will form the chief basis for theoretical discussion. *Five hours a week, winter quarter.* Professor Johnson.

253. ADVANCED SOCIAL STATISTICS (6).

This is a seminar course on the application of statistical method to social phenomena. Required of all candidates for graduate degrees. *Four lecture and four laboratory hours a week, winter quarter.* Professor Hagood.

270. MARRIAGE. See under Social Work.

271. THE FAMILY. See under Social Work.

327, 328, 329. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics. *Five hours a week, fall, winter, and spring quarters.* Professor Odum.

331, 332, 333. GRADUATE RESEARCH SEMINARS (5 each).

Research in selected topics. *Five hours a week, winter and spring quarters.* Professor Groves.

341. SEMINAR (5).

Individual research in a special field under the direction of a member of the department.

RURAL SOCIAL-ECONOMICS

Courses for Graduates and Advanced Undergraduates

101. NORTH CAROLINA: ECONOMIC AND SOCIAL (5).

This course is designed to familiarize the student with North Carolina: population, agriculture, resources, social life, economic development, industry, wealth, taxation, education, public welfare. *Five hours a week, fall or spring quarter.* Professor Hobbs.

103. HISTORY OF AGRICULTURE (5).

This course traces the development of agriculture from its earliest beginnings to the present: earliest beginnings; Greece and Rome; later agriculture in Europe; American agriculture. References: Gras, *A History of Agriculture;* Schmidt and Ross, *Readings in the Economic History of American Agriculture;* special readings. *Five hours a week, spring quarter.* Professor Hobbs.

110. RURAL LAND PLANNING AND LAND ECONOMICS (5). Prerequisite or corequisite, general economics, or Rural Economics 51.

This is an introductory course to the broad field of land economics, with special attention given to farm and forest land resources, utilization, and conservation in the United States. A few subjects covered are: the problem of land economics; characteristics and classification of land; present and future utilization of land; property in land; land tenure; land taxation; social ends of land utilization; policies of land settlement and development; rural resettlement; forest conservation. *Five hours a week, winter quarter.* Professor Hobbs.

Courses for Graduates

271abc. RURAL SOCIOLOGY (5 each quarter).

Deals mainly with rural social problems, and research in rural sociology. Covers such topics as the solitary farmstead and the rural community, farm tenancy, the farm family and farm population, the rural school, the rural church, rural citizenship, town-country relations, nature and extent of rural social research, etc. *Five hours a week, fall, winter, and spring quarters.* Professor Hobbs.

311abc. RURAL SOCIAL PROBLEMS (5 each quarter). Prerequisite, approved courses in general and rural sociology.

a) Research, seminars, and field investigations of (1) rural social institutions and agencies; (2) transportation and communication facilities in rural areas; (3) country-mindedness and its sequences; (4) town and country interdependencies; (5) social disability in country areas, our public welfare laws and agencies; (6) social aspects of tenancy and illiteracy; (7) state and county studies, economic, social, and civic; county bulletins, etc. b) Rural Social Survey; research technic, and field work. c) Statistics; interpretation and use. d) Rural Social Engineering; (1) county community studies; (2) community organization, economic and social; (3) county government; (4) rural leadership, requisites and technic. *Five hours a week, fall, winter, and spring quarters.* Professor Hobbs.

DEPARTMENT OF ZOOLOGY

Robert Ervin Coker, Charles Dale Beers, Professors.
Donald Paul Costello, William Louis Engels, Robert Devore Boche, Irwin Clark Kitchin, Assistant Professors.

Those who find themselves strongly interested in zoology will meet with opportunities for teaching and investigation in several of the subdivisions of present-day universities, such as college, technological, medical, and graduate schools. Others will find their best opportunity, especially if their interest centers around problems of cellular biology in research institutions of a more or less medical character. Museums need the service of many zoologists as curators, who are expected to acquire intimate and extensive knowledge of the classification and natural history of some particular group. Somewhat the same kind of specialization is demanded of those who are drawn into institutions for the betterment of public health, some concentrating on the parasitic worms, water biology, etc. There is, finally, much work of an economic nature that is carried on by zoologists in the service of national and state bureaus, such as the U. S. Bureau of Fisheries, the several bureaus under the U. S. Department of Agriculture, and the National Park Service.

The Department has recently moved into a new and modern building with four floors, including basement. In the basement are two class laboratories, with associated service room; two constant temperature rooms, provided with refrigeration; a room for a special constant temperature apparatus with small chambers in which constant temperatures, low or high, can be maintained indefinitely with a high degree of precision; animal room; culture room; vivaria; dark room; store rooms and shop. The main floor has four class laboratories, with two associated preparation rooms; auditorium; chart room; and a combination lobby and museum The second floor houses the library and offices, advanced undergraduate laboratories, seminar room and some staff laboratories. The third floor is reserved for research and advanced graduate study with several graduate laboratories, staff laboratories, photographic room, stock room, collection room, etc.

The departmental library receives many American and the more important foreign journals, and has complete or virtually complete files of most of them. It has a good working collection of treatises and monographs and a large collection of reprints.

The department is prepared to direct research on: general problems of cellular biology as presented in the embryological and cytophysiological processes of animals, more especially the echinoderms, annelids, mollusks and amphibia; experimental embryology with special reference to the amphibia; physiology and ecology of lower aquatic animals; ecology of vertebrates; phenomena of variation as exemplified in the classification of the Entomostraca; life-cycles of protozoa from the comparative and experimental standpoints; and genetics and allied problems. Investigations along these lines have now been carried on for many years. The published records have appeared from time to time in the leading domestic and foreign journals of zoological science, and the chief data have been incorporated in treatises which are in general use. Opportunity to carry on investigations at the seaside may usually be obtained during the summer at the biological station of the U. S. Bureau of Fisheries situated at Beaufort, N. C., or elsewhere.

The courses listed below are such as lead more especially to the master's degree (A.M. or S.M.). For the Ph.D. degree the essential requirement is that the candidates shall have such a grasp of the concepts and methods of zoology as will enable him independently to acquire knowledge of some importance that is new to science. This depends not only on manipulative skill, experience, and judgment, but also on ability to handle the literature of the subject, the treatises, handbooks, and especially the current journals.

Courses for Graduates and Advanced Undergraduates

103. COMPARATIVE VERTEBRATE ANATOMY (6). Prerequisite, Zoology 41 and 42.

Lectures on the structure and evolutionary history of the chief organ systems of vertebrates, with emphasis on functional aspects. Dissection of amphioxus, petromyzon, fowl, and cat. *Two lecture and nine laboratory hours a week, fall quarter. Laboratory fee, $10.00.* Professor Engels.

104. VERTEBRATE EMBRYOLOGY (6). Prerequisite, Zoology 103. Students who have not had Zoology 103 may be admitted by special permission.

Laboratory study of maturation and fertilization phenomena in ascaris; segmentation and formation of germ layers in frog; germ layers, extraembryonic membrances, and development of characteristic vertebrate organs in chick; essentials of microscopic technique. Readings on comparative development,especially in early stages, of amphioxus, amphibia, birds, and mammals. *One lecture and ten laboratory hours a week, winter quarter. Laboratory fee, $10.00.* Professor Engels.

105. VERTEBRATE HISTOLOGY AND MICROTECHNIQUE (6). Prerequisite, Zoology 104.

Microscopic preparations of selected tissues and organs are made from the fresh animal and studied with the help of texts and original papers. Laboratory work with assigned readings and seminar reports. *One lecture and ten laboratory hours a week, spring quarter. Laboratory fee, $10.00.* Professor Costello.

106-107-108. MORPHOLOGY AND CLASSIFICATION OF THE INVERTEBRATES (15). Prerequisite, Zoology 41 and 42.

Dissection and microscopic study of types of the chief orders, with some consideration of life histories; systematic diagnosis. Basic course for all advanced work in zoology. Laboratory work with occasional lectures. *Ten laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $5.00 a quarter.* Professors Beers, Engels, Kitchin.

109. INTRODUCTION TO HYDROBIOLOGY (5). Prerequisite, Zoology 41 and 42.

A study of animal life in water, with special reference to the relation of animals to each other and to their environments. Field and laboratory work, lectures, reading of special papers, discussions. *Ten laboratory hours a week, fall quarter. Laboratory fee, $5.00.* Professor Coker.

110. PARASITOLOGY (MEDICAL ZOOLOGY) (5). Prerequisite, Zoology 41 and 42.

A consideration of the structure, classification, and life histories of the protozoa and worms of medical importance and of the arthropods which either cause disease directly or which transmit the bacteria, protozoa, and worms of diseases. *Lectures and demonstrations, five hours a week, winter quarter.* Professor Beers.

111. GENETICS (6). Prerequisite, Zoology 41 and 42 or equivalent.

A course of lectures and laboratory experiments designed to acquaint the student with the mechanisms underlying the phenomena of inheritance. The lectures will treat of Mendelian heredity, mutation, population mechanics, and the relationship between genes and development. In the laboratory the student will carry out a number of breeding experiments with Drosophila. *Four lecture and four laboratory hours a week, winter quarter. Laboratory fee, $5.00.* Professor Boche.

112. VERTEBRATE FIELD ZOOLOGY (5). Prerequisite, Zoology 41 and 42.

A study of the vertebrates in nature, their functional relationships with one another and with the other biological and the physical elements in their environment. Emphasis is placed on behavior, on distribution (historical, geographical, and ecological), and on variation (the speciation problem). Lectures, discussions, readings in source literature, and laboratory work, with field study of local vertebrates. *Ten laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor Engels.

s113. ADVANCED INVERTEBRATE ZOOLOGY (9). Prerequisite, Zoology 42 or equivalent.

Morphology, principles, and classification of invertebrate forms. Open to undergraduates with majors in zoology and to graduates with minors in zoology, and, in special cases, with permission of the Department, to graduates with majors in zoology as a substitute for Zoology 106-107-108 (basic course for all advanced work in zoology). *Ten lecture and sixteen laboratory hours a week, first summer session only. Laboratory fee, $12.00.* Professor Kitchin.

Courses for Graduates

209-210-211. EXPERIMENTAL EMBRYOLOGY (15 or more).

The study of fertilization, cell lineage, differentiation, and regeneration of invertebrates and vertebrates from the experimental viewpoint. Lectures and seminar reports. *Not fewer than ten laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $5.00 a quarter.* Professors Costello, Kitchin.

212. HYDROBIOLOGY (5). Prerequisite, Zoology 109.

The study of aquatic organisms and environments, with attention restricted to a particular topic, as a small group of animals, a limited set of habitats, or special phenomena of behavior. The work is on the border line of research, involving critical examination of literature, as well as field and laboratory study and seminar reports. *Ten laboratory hours a week, fall or winter or spring quarter. Laboratory fee, $5.00 a quarter.* Professor Coker.

215. PROTOZOOLOGY (5).

Special study of the protozoa living in man and lower animals, with consideration of host-parasite relationships and with comparative studies on a few free-living forms. Laboratory work with occasional lectures, assigned readings, and seminar reports. *Ten laboratory hours a week, fall or spring quarter. Laboratory fee, $5.00.* Professor Beers.

216. CYTOGENETICS (5). Prerequisite, Zoology 105 and 111.

A study of nuclear phenomena in cells during mitosis and maturation in relation to the facts of genetics, involving practical training in genetical and cytological techniques. Laboratory work with occasional lectures. *Ten laboratory hours a week, spring quarter. Laboratory fee, $5.00.* Professor Boche.

217. GENERAL PHYSIOLOGY (3). Prerequisite, Organic Chemistry.

A consideration of the physico-chemical aspects of protoplasm, including recent studies on cataphoresis, permeability, surface tension, pH, viscosity changes, and other measurable properties of living cells. *Three hours a week, winter quarter.* Professor Costello.

316. RESEARCH (3 or 5 or more).

Under this heading may be credited the work of a single quarter or that of one or more years. *Six or ten or more laboratory hours a week, fall, winter, and spring quarters. Laboratory fee, $3.00 or $5.00 a quarter.* Professors Coker, Beers, Costello, Engels, Boche, Kitchin.

ADDITIONAL COURSES FOR GRADUATE CREDIT

Certain courses in the School of Law may be elected as minors by properly qualified graduate students. These courses are the following: Administrative Law, Negotiable Instruments, Municipal Corporations, Carriers, Insurance, Sales, Corporations, Constitutional Law, Criminal Law, Evidence, Persons.